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THE DIAGNOSIS OF GLANDERS BY HYPODERMIC INJECTION OF MALLEIN.

BY PROFESSOR DEGIVE, DIRECTOR OF THE BRUSSELS VETERINARY SCHOOL.

The Diagnosis of Glanders.

IT is known that Helman, of Dorpat, at first, then Kalming, of Riga (who died from contracting glanders accidentally), and Preusse, of Dantzig, have done for Glanders what Koch has accomplished for tuberculosis; they having, by pure cultures of the bacillus of that disease, prepared a glycerine extract designated *Glander-lymph* or *Mallein*, which, when injected in small quantity beneath the skin of a horse affected with that disease, causes a *great elevation of temperature*, accompanied by general prostration, acceleration of the pulse, inappetence, etc. This reaction does not become manifest if the animal is not glandered.

Numerous experiments confirm the results reported by Helman and Preusse, so that we may now consider it as a scientific fact that Mallein is a most precise reagent in establishing the diagnosis of glanders in the horse.

The interesting observations recently communicated by Nocard to the Société Centrale de Méd. Vétérinaire of Paris, establish this most valuable fact, from a sanitary police point of view, that, thanks to mallein, *the existence of Glanders may be revealed in animals which do not offer the slightest indication of the disease.* Doctor Roux, of the Institut Pasteur, a few days ago told of an instance which was absolutely decisive in this respect. In an establishment in which Glanders had reeently made some victims, all the other horses, about 100,

received a subcutaneous injection of mallein. Of these 100 horses, 28 exhibited the characteristic reaction and were slaughtered; in everyone of them were found internal (or occult) lesions of Glanders. Of the 28 only two had shown signs during life which might have rendered them suspected; the other 26 did not offer the least indication of the disease.

Now that it is possible to determine the existence of the malady not only in the suspected, but also in those which are not suspected of contamination, it may be asserted that glanders is vanquished, and we may hope that it will not be long before it disappears from our necrological list. This hope is all the more well founded when it is known that our *confrères* can have the mallein on the most advantageous conditions; for Dr. Roux has generously offered to send to the Brussels School a quantity of the *brut* mallein sufficient for its requirements, or even for those of Belgium. So long as the consumption of the substance is not considerable, the Institut Pasteur might furnish it gratuitously; but as this is a matter that is more especially related to sanitary police, it is to be hoped that the Government will defray the cost of providing the small quantity of material (box, tubes, labels, etc.), necessary for the requirements of the veterinary surgeons throughout the country. We are in a position to supply those who are interested, in the meanwhile, with a certain number of doses of mallein which they may usefully employ. They will receive mallein diluted in five per cent. carbolised water; this is ready for use. To obtain the dilute mallein, a cubit centimetre of concentrated *brut* mallein is mixed with nine cubic centimetres of carbolised water.

Injection of the Mallein.

By means of a *carefully sterilised syringe*, the mallein is withdrawn from the tubes in which it is forwarded and it is injected at once beneath the skin about the middle of the neck. The dose to inject is two cubi ccentimetres of the solution (½ cubic centimetre of the *brut* mallein).

Observing the Temperature.

The temperature is taken *per rectum* before the injection of the mallein, and every two hours after the sixth hour from that operation up to the twentieth hour. Strictly speaking, three observations should be sufficient—at the eighth, twelfth, and sixteenth hours. Every horse whose temperature rises more than *two degrees* should be considered glandered; an

increase not exceeding one degree is of no significance, but if the temperature increases between one and two degrees the animal ought to be classed as suspected. It is well to take the temperature morning and evening for several days before injecting the mallein, in order to make certain that the horse does not present abnormal oscillations in the thermic scale; as if this be so it would be advisable to defer the injection.

Such are the indications contained in the circular accompanying the supplies of mallein sent out from the Pasteur Institute. It may be added that the elevation of temperature is accompanied, in the glandered horse, by marked general derangement, and a transient œdematous swelling at the seat of inoculation. In the healthy horse there is no general derangement, the increase in temperature is slight or not at all, and the local œdema is scarcely noticeable.

Injection of Mallein into Six Horses under Treatment or Observation in the Brussels Veterinary School.

Of these six horses two were attacked with the glander-farcy disease—one having the cutaneous or farcy form, the other the nasal or glander form. A diffused swelling of the left foreleg with corresponding lymphangitis; disseminated tumours or ulcers on the swelling and along the course of the lymphatic vessels; a small, indurated and indolent submaxillary gland on the left side; such were the principal manifestations observed on the first horse—a light-draught gelding seven years old.

The second was a heavy-draught mare, seven years old, the condition of which was betrayed by an obstinate nasal catarrh, greyish nodules and erosions on the nasal septum, a hard and indolent subglossal glandular enlargement, and a diffuse engorgement of the left hind leg. The catarrhal symptoms, and nodules and enlarged gland, after existing a certain time on the right side, had become transposed to the left side. The nasal discharge of this animal, as well as some matter derived from scraping the ulcers of the first one, was inoculated into several guinea-pigs, and on each occasion gave rise to the characteristic reaction of glanders—the production of an ulcer at the seat of incision.

The Other Horses.—No. 1. A heavy-draught gelding, ten years old. At present there is an elongated tumefaction on the right side of the upper lip, and enlargement of the corresponding subglossal glands which has not quite disappeared.

No. 2. An aged draught mare. Has been affected with left-sided nasal catarrh, accompanied by slight subglossal adenitis of the same side, which persists.

No. 3. Light-draught mare, six years old. Unilateral nasal catarrh attributed to disease of the sinus, with slight glandular enlargement.

No. 4. Irish gelding, seven years of age. Obstinate catarrh of the air passages, but no glandular tumefaction. Frequent spasmodic cough, and trachea and larynx very sensitive to pressure.

For two days preceding the injection, the rectal temperature of each horse was taken twice a day, morning and evening. On the day of injection (the 14th of last June), and before the operation, which took place at 9 a.m., the rectal temperature was: in the horse with farcy, 38·2° Cent., in the glandered horse, 38°, and in the others from 37·9° (No. 1), 37·8° (No. 2), 39·2° (No. 3), and 37·5° (No. 4).

After six hours the temperature was taken every two hours. At the twelfth hour, in the farcied horse, it was 41·1°; in the glandered horse, 41·3°; and in the others 37·9° (No. 1), 38·7° (No. 2), 39·9° (No. 3), and 38·6° (No. 4).

To sum up, the hyperthermic action has been 2·9° and 3·3° in the two diseased horses, and feeble or null in the other four. A grave derangement, prostration, acceleration of the pulse, inappetence, and a pronounced local œdema were produced in the two glandered ones, but the others retained their appetite and usual liveliness.

These results agree in every point with those related by Helman, Preusse, and Nocard, while they confirm the fact noted by the latter, that the mallein prepared by Dr. Roux at the Pasteur Institute possesses sufficient activity to determine the desired reaction in a dose of $\frac{1}{4}$ cubic centimetre ($2\frac{1}{2}$ cubic centimetres of the solution).

Nocard has observed that a much stronger dose of the mallein—treble or quadruple—causes a sensible disturbance of the more important functions in the healthy horse, and a thermic elevation of $1\frac{1}{2}$° to 2°. In thirty-four animals into which he had injected the dilute mallein in a $2\frac{1}{2}$ cubic centimetre dose, he always found an elevation of more than 2°; it generally varied between 2·5° and 2°, in some even exceeding 3°. On several occasions, by the aid of mallein he has obtained the characteristic hyperthermic reaction, when test inoculations on the guinea-pig and cultivation on potatoe of the suspected matter (mucus and pus) has not produced any result.

While fully recognizing the great superiority of the malleinic injection over all the other diagnostic means at our disposal, my opinion is that the latter are still valuable, and that nothing should be neglected to render their application and signification as precise as possible.

In doubtful cases in which the hyperthermic reaction rests between one and two degrees, it is necessary to submit the animal to a minute examination, to obtain all the information possible with regard to the pathogenic conditions (contagion) of the disease, to resort to inoculation of the dog and guinea-pig, or cultures on potato, with one or other of the suspected matters collected from the patient. Such symptomatic manifestation, such information as to the origin of the disease, such experimental result, when added to the insufficient reaction yielded by the mallein, may contribute to remove doubts, and give authority to affirm the existence of the malady.

A NEW METHOD OF APPLYING DRESSINGS TO HORSES' FEET.

BY VETERINARY CAPTAIN J. A. NUNN, F.R.C.V.S., D.S.O., PRINCIPAL, VETERINARY COLLEGE, LAHORE.

In certain cases in which it is necessary to apply dressings or poultices to horses' feet, the use of the ordinary leather or canvas boot is objectionable, and under such circumstances a duster or piece of sacking is commonly employed, when it is folded round the foot and fastened around the pastern by a strong portion of tape or a strap. On any animal this is likely to become loose, but particularly on a restless one, and more especially if it be on the hind foot of a kicking horse, when it is almost impossible to keep it on. The following plan has proved to be an improvement on the ordinary method of binding the top of the cloth round the pastern :—

A thin rope or stout piece of cord about five feet long is doubled in two, and a knot tied at the double end so as to form a loop about five or six inches long, this length depending on the size of the foot, as at A, figure I. The poultice or dressing is applied to the foot and the cloth wrapped round in the ordinary way, the loop of the cord being placed at the back of the pastern, as in A, figure II. ; the ends of the cord are passed round one on the inside, and the other on the outside towards the front, as in BB, figure II. These ends are then twined together down as far as the toe, see C in figure II. The foot is now lifted up and the ends of the cord, CC,

figure II., are passed through the loop A, as at D, figure II., and drawn tight. The ends of the cords are now separated, and carried up to the coronet, as at E, figure II., one on the outside, the other on the inside of the foot. They are then again twisted round each other once or twice, as at F,

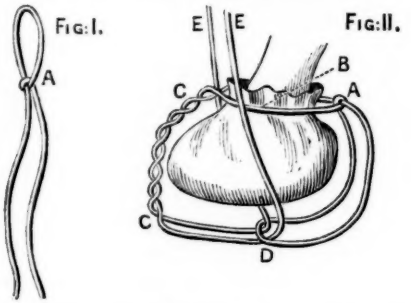
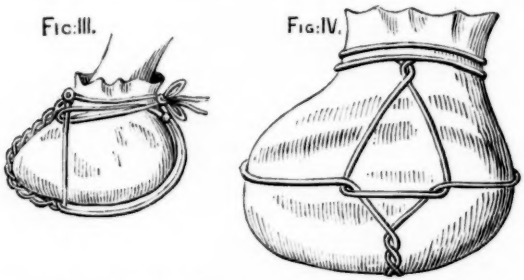


figure III., and are passed round the pastern once or twice on each side. They are now passed under the cord E, figure II., III., and then reversed so as to tighten up E, and are finally tied round the pastern in the usual manner. The arrangement of the cords on the sole is shown in figure IV., which is a view from the posterior part.

The advantages of this method of fastening have been found to be: 1. It does not chafe the skin; 2. If properly applied it has never been known to become undone; 3. It is



the only way we know that a poultice can be satisfactorily applied to a mule's hind foot; 4. Horses can be exercised when the poultice or dressing is on the foot, which is almost impossible with the ordinary leather boot; 5. The sacking or canvas does not cut through so quickly.

PROLONGED GESTATION: A CALF MONSTROSITY.

BY F. J. TUCKER, M.R.C.V.S., BRAMPTON, CUMBERLAND.

THINKING the following case may be of interest to the profession, I send it for publication in the VETERINARY JOURNAL.

About six weeks ago a client came to consult me about a cow of his which was pregnant, and had gone six or eight weeks over her time; but as he said she was not prepared for calving, nor in any way uneasy, I told him to leave her alone. On September 24th I was sent for, as the cow was calving. On my arrival I examined the animal, and found the calf lying on the left side with only one leg presenting. With great difficulty the calf was extracted, but not until the contents of the thorax and abdomen were removed, as it was an exceptionally big calf. I had it weighed, and found it to be, although eviscerated, 100 pounds. It was a black bull-calf with very long hair; there were no eyes, but instead of them were two holes, about one-fourth of an inch apart, and right in the centre of the forehead; neither had it any nose, though it had a mouth like a pug dog, but more deformed.

I believe I felt the calf move after I arrived, and the owner said he saw it move on the previous day; by the condition it was in it could not have been dead many hours.

The cow is a blue-grey, and six years old, this being her fourth calf. She was served on October 11th, so that the forty weeks were up on July 18th, and if she had carried the calf until September 26th, she would have been exactly ten weeks beyond her time. I have seen the book in which the owner of the bull keeps the dates of all the cows served, and in this instance his record corresponds with that of the owner of the cow, who had a heifer served by the same bull on December 10th, and she calved on September 16th. This circumstance is useful to know, as the owner was certain the heifer was served some time after the cow. These are the only two cows he keeps, he being a village shoemaker by trade, and has only one field, which is close by his house; into this field the cow was put during the day, but was always taken in at night, and as there is only one other black bull in the neighbourhood, there was no chance for the cow to have stolen the bull; besides which, she has never been seen to break the bulling.

INTESTINAL OBSTRUCTION DUE TO A LARGE OVARIAN CYST.

BY M. DEBRADE, VETERINARY SURGEON, FIRST CLASS, NINTH REGIMENT OF FRENCH CUIRASSIERS.

THE subject of these remarks, a fine-looking cross-bred mare, aged twelve years, when admitted into our infirmary one evening in August, was suffering from a rather severe attack of colic. The cause of two former attacks this year had not been ascertained. For some months, although well cared for, she had lost flesh, had become weaker, appeared dispirited, and respiration was accelerated. The colic in this case was thought to be due to slight indigestion, and the patient was treated for this in the usual way.

About six o'clock the animal was very restless, and appeared to be in great pain; the efforts to defæcate were mnny and violent, but, despite the numerous rectal injections and purgatives employed, nothing was passed. The mare frequently attempted to roll, and was continually pawing the ground.

At ten o'clock she was bled and received an injection of 15 centigrammes of pilocarpine. This had no apparent effect, for the colic continued all night. Friday morning an examination was made per rectum. The rectum was almost empty, but the hand, directed forward, encountered, immediately on entering the abdominal cavity, a large spherical mass about the size of a child's head, which entirely obstructed the passage. The tumour was situated on the right side in front of the pelvic cavity and directly below the bladder. It was behind the pelvic flexure of the large colon, from which it was separated by several coils of small intestine and floating colon. It greatly compressed all the structures immediately below it. Pressure with the fingers showed it not to be very hard, and the resulting fluctuating movement revealed the presence of fluid in its interior.

Now inquiry arose as to the possible nature of the tumour. Was it an ovarian cyst or some other neoplasm developed in the abdominal cavity? We were certainly not dealing with vesical colic; on examination per rectum the bladder was found distended, but urine has been passed several times since the first symptoms of colic. Owing to the stoppage due to the mechanical obstruction by this tumour, prognosis was very serious.

Hypodermic injections of physostigmine and pilocarpine were tried, also coffee, medicated linseed, numerous purgatives, and frequent rectal injections. These produced no effect.

Throughout the evening of Friday and morning of Saturday the mare remained standing with her head down, pawing the ground unceasingly. Every now and then she attempted to lie down, and there was also much straining. Pressure on the abdomen produced symptoms of pain, the animal endeavouring the while to avoid this pressure.

There was no flatus, and rectal injections were instantly expelled.

On Saturday evening the mare was again bled, 3 litres of blood being taken. We tried every sedative and purgative at our disposal; large doses of physostigmine and pilocarpine were injected seven or eight times without any apparent effect. During Sunday and Monday there was no apparent abatement in the severity of the colic, and by Monday evening the animal was quite exhausted. Death occurred shortly before midnight.

Post-mortem examination.—The *p.-m.* was made six hours after death. The abdomen was carefully opened, the animal being supported on its back. On removing the large intestinal viscera, the enormous tumour in the right flank, which had already been discovered per rectum, was brought to view. This growth was not in any way adherent to the mesentery or intestines. On raising it, it was found to be united to the right side of the womb by the broad ligament. It was resting directly on the end of the floating colon, whose walls, owing to the pressure to which they were subjected, were much attenuated. The whole of this part of the colon was shrunken, the walls were bloodless, and it contained no trace of excrement. On the contrary, in every other part of the intestine extremely hard pellets of dung, adhering together and forming numerous dung balls, were met with.

No trace of the right ovary existed, but in its place was this enormous cyst attached to the womb by the broad ligament. This ligament was much larger than normal, and the whole of its anterior border was closely united to the hinder part of the cyst, the walls of which it increased in thickness. It was three times its normal size, and this, together with the fact of its being partly tendinous, enabled it to support the great weight of the cyst.

The Fallopian tube had completely disappeared. The capillary vessels on the surface of the cyst and broad ligament were three or four times their usual size; they were very distinct, and formed numerous beautiful ramifications. The cyst, almost spherical, had a diameter of 0 m.·27, a circumference of 0 m.·87, and weighed 12 kilog., 600 gr. On

puncturing the cyst with a trocar, it was found to contain rather more than 9 litres of a very thick, odourless liquid of a brownish-red colour. Its walls were 3 centimetres thick, and were partly composed of a very strong fibrous tissue.

The left ovary was three times larger than normal, and its walls were also somewhat thickened and fibrous. It contains five other smaller cysts, with very thin and transparent walls, which, on being punctured, were found to contain but a small quantity of fluid.

How long had the cyst existed? Was it to be dated from the beginning of the year when the mare first began to manifest symptoms of colic? Was the contained fluid formed little by little, so as to insensibly produce the large quantity found at the *post mortem*, or had the conditions influencing the formation of the cyst reached such an acute stage as to result in the production of the whole of the fluid just before the last attack of colic? The great thickness of the cyst walls proved it to be an old lesion, and showed that it had but slowly attained its present bulk. The contents were quite free from blood clots, and the numerous capillaries on the surface of the cyst were not the least engorged, as they undoubtedly would have been had congestion or recent inflammation existed. In this case, had the intestinal obstruction been diagnosed as due to an ovarian cyst, temporary relief might have been obtained by puncturing the cyst by way of the vagina with a long trochar and cannula, and in this manner drawing off the fluid. This would have been followed by an antiseptic injection. To effect a permanent cure, it would have been necessary to remove the ovary through an incision in the flank. We should have attempted this operation had not the owner repeatedly expressed a desire that the sufferings of his mare might not be prolonged.

This well-known treatment for cystic ovary in the human subject is almost invariably successful.—*Recueil de Méd. Vétérinaire.*

AN OUTBREAK OF EPIZOOTIC ABORTION IN CATTLE.

BY VETERINARY SURGEON DESMOND, WARRNAMBOOL, VICTORIA, AUSTRALIA.

As much attention is being drawn to the subject of Epizootic Abortion, the following results of investigation may be of interest to those studying the subject, and of service to country practitioners.

An outbreak occurred in this district on a large dairy farm where upwards of eighty cows were being milked, the milk supplying a cheese and butter factory. The farmer came to me with the doleful cry, "I am in dreadful trouble. I have lost £100 on my farm during the last few months." He went on to explain that forty cows had slipped their calves; and on further questioning I ascertained that the animals had aborted in all stages of gestation—from a few months to near full term—or, to repeat his own words, "They were from as big as my boot to full size."

I at once came to the conclusion that I would have to treat an outbreak of Epizootic Abortion, and a subsequent inspection of the cattle and farmyard confirmed me in this beyond a doubt.

I first proceeded to examine my client's stock and the surroundings of the farm. It was about an hour after the morning's milking when I arrived, and the cows which had just been milked were to be seen in an adjacent paddock, where green rye-grass was supplied to them morning and evening, this being distributed over the ground in small heaps. The cattle were of the class generally to be seen on dairy farms in this district, and were of various ages and of all sizes. The cows that had aborted were easily picked out of the herd, as they showed want of condition, and their hair was rough and lustreless. While walking through the paddock in which the cattle were then grazing, my attention was attracted to several places where the earth had evidently been recently thrown up, and the farmer confirmed my suspicions by saying that it had been the custom to bury the aborted fœtuses where they were expelled. I advised him to destroy them by burning.

The dry cattle were next inspected, and the cows, especially, were found to be in splendid condition. But on entering a paddock in which the young cattle (all heifers) were grazing, I was surprised to see a very poor bull. On closer examination I found him to be in wretched condition, and the brute had scarcely sufficient strength to move about. His hair was very rough, while the tuft of hair at the prepuce was matted, and had a dark appearance, which made me suspicious that he had been the means of assisting to spread the disease. The owner informed me that he had paid £3 for this bull, and had had him two years. I instructed him to destroy the animal at once. "That is the only one I have," protested my client, and in reply to my question whether he thought it right to have only one bull to one hundred cows, he said he considered

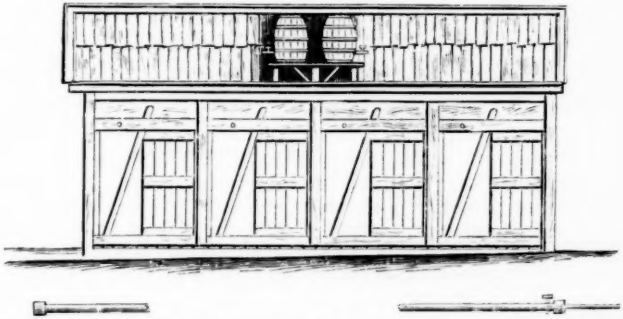
it quite enough, though he had often seen six or seven cows in season round the bull while it was lying down. I informed him that thirty cows to one bull were considered by competent authorities to be a sufficient number.

An inspection of the milking-yard disclosed that it was in a deplorable state, as it was more than two feet deep with liquid manure, and the corners, which were slightly lower than other portions of the yard, were covered with a green scum. The reason assigned for allowing the filth to accumulate in this manner was that the manure was required, and it was only when the yard became too boggy that all the stuff was removed, and a layer of ferns spread over it. The yard was in a very bad situation, and the arrangements were on a primitive plan. It was three chains from the dwelling-house, and was only three-quarters of a chain square, being altogether too small for the number of cattle (80) milked there twice a day. The yard sloped towards the bales, which were built under an old shed on one side, and so arranged that each cow, after being milked, had to go through a small gate at the head of the bale into a race which led into the paddock. This was a very bad arrangement for a dairy-yard, as it must frequently happen that one cow would block the race near the outlet, and so prevent the others from passing. The race, like the other surroundings, was in a frightful state, being one mass of liquid manure. The drainage (save the mark!) was also very defective, and adjacent to the yard, in the low side, there was a small pool of stagnant water, which had evidently percolated through the soil from the yard.

I informed my client that it was absolutely necessary for him to remove the yard to a better position, and he at first demurred on account of the expense, but consented to effect the improvement when I told him I desired to be paid by results. I suggested that he should request his landlord to pay a portion of the cost of removing the yard, but he seemed to think there was very little prospect of such an appeal being successful. His landlord was a sheep breeder, and if he could not get a tenant for the farm for dairying, he could stock it with sheep; if he did so, he would probably soon learn to his cost that an outbreak of this kind was as serious in sheep-raising as it was in dairy-farming. I selected a more suitable site on which the new yard was to be erected, and was fortunate in finding at a short distance a stony formation which would afford natural drainage. In accordance with my suggestion, the shed to contain the bales was built of new timber, as the old timber could not be disinfected. The floor

of the shed was boarded with strong planks with tar joints, and this sloped into a plank drain, also having tar joints, which carried the excreta and disinfecting solution clear of the yard. The gates by which the cattle were let out after being milked were made so as to open direct into the paddock.

I shall now proceed to describe the treatment. I determined to put in force an antiseptic method of treating the outbreak, on a plan which I believe is original; and for this purpose a high stage was erected in the yard at the rear of the bales, and on this stage two casks (each of 30 gallons capacity) were mounted sufficiently high to allow the solution to gravitate with the force required to irrigate the genital organs of the cows, one cask containing a solution for this purpose, while the other was to sluice out the bales and drain. A long pipe, with suitable connections, was attached to the cask, and by



this means the genital organs of the cows were irrigated with a medicated solution. After the milking the same pipe was connected with the other cask, which contained a disinfecting solution, and by this means the shed and bales were disinfected. The following were the ingredients in the solution used for irrigating the genital organs of the cows:—

Hydr. perch., 1¼ oz.
Sodii chlorid., 3 lbs.
Rain water, 30 gals.

And to disinfect the shed and bales, I decided to use the following solutions alternately, and place in cask No. 2:—

Hydr. perch., 5 oz.
Rain water, 30 gals.

and

Ferri sulph. comm., 3 lbs.
Rain water, 30 gals.

I gave the following directions to my client: To watch all cows in calf, and immediately there were signs of parturition or abortion, to have them removed at once to a small paddock; if abortion took place, the fœtus and placenta were to be destroyed by fire; if the placenta did not come away naturally in ten to twelve hours, to remove it by mechanical means, and then irrigate the genital organs with about 2 gallons of solution from the No. 1 cask; this treatment to be adopted also with cows that had calved, so as to be on the safe side, and was to be done after all the other cows were milked and turned into the pasture. I would have had separate bales and yards for newly-calved cows, and also for all new cases of abortion, but I adopted the above plan for the sake of economy.

After the new yards were built, and the treatment had been followed for about five days, I again visited the farm, and arrived before the morning milking had commenced. An inspection revealed a very altered state of affairs, which tended to show that the farmer had realised the importance of adopting the measures recommended for stamping out the disease. The bales and yard and the surroundings were perfectly clean, and there was not the slightest odour from them. I inquired how the treatment had affected the cows, and the reply was: "The amount of matter that came away from the cows was surprising; it was yellow, and in some cases lumps like honey-comb also came away." "What length of time has elapsed since abortion took place in the cows from which there was so much discharge?" was my next question, and to this my client replied, "At all periods, from a few weeks to many months; but the cows the most discharge came from were those that I could get two feet of pipe into the genital organs."

While on this visit I found all the cows in œstrum, which I was informed came on about the third day the solution was used. He also mentioned that in the first and second days he could only pass a foot of the pipe into the genital organs, but in the third day he could pass about two feet, and was surprised to see such a mass of mucus come away. The fact that all the cows were coming in season was rather an advantage, as the os uteri would be dilated and the uterus could be irrigated.

I have continued the treatment described above, and, so far, the results are highly satisfactory.

One method of spreading the disease came under my notice on the occasion of my last visit. There was a bull near the milking-yard, which, the farmer informed me, belonged to

his neighbour, and it had jumped a three-railed fence to get among his cows. I advised him to inform his neighbour of the danger of the disease being carried to his cattle by the agency of the bull, and I believe the animal was at once removed.

In the course of conversation with some professional friends, I was asked, "What would you do if the owner of such a filthy farm as you have described refused to make the improvements?" My reply was that in this case the farmer kept the premises in that state from a mistaken idea of economy rather than from wilful neglect; but in the event of an owner refusing to comply with my instructions, I would report the matter to the Board of Health, and if this did not bring about the desired result, then I would inform his landlord, and also the persons to whom he supplied his produce. In adopting such measures I would not be exceeding my duties as a veterinarian. If a fatal disease were to break out in that man's family, and the Board of Health found the premises to be in such an insanitary condition, then I would be censured—and deservedly so—if it were found that I had previously examined the place and not furnished a report to the authorities.

The outbreak occurred in 1890, so I have had ample time to note the effects of my treatment. It is hardly needful to say that I have waited anxiously for the results, and that I have much pleasure in reporting that they were most gratifying to the owner of the dairy-farm and to myself. I have kept continuously in touch with the owner, and requested him to call on me when anything of note occurred in the course of the treatment. To sum up, the treatment had the desired effect. I think I can reasonably say this from a review of the circumstances, if the irrigation had not been resorted to, how would all the discharge that came away after the irrigation was used have been got rid of? Only four cows aborted at next calving, and the owner informs me that he could not irrigate these four satisfactorily, as he could not get all the pipe into the genital organ.

Since the outbreak was stamped out, Dr. Ross has procured a complete bacteriological laboratory, and has accepted me as his collaborator; and if I had to treat such an outbreak again, I would make a bacteriological investigation with a view to isolating the micro-organism concerned in the production of the disease.

Editorial.

RABIES AND GLANDERS.

Two Orders have been quite recently issued by the Board of Agriculture, amending previous Orders having reference to the veterinary police measures applicable to Rabies and Glanders. The Board has evidently been stimulated to do something more in the way of checking these animal diseases than it has hitherto attempted, owing to the threatened recrudescence of Rabies, which has all along been more or less prevalent in some parts of the United Kingdom, but has brought itself more into evidence by causing the loss of human life. The Board, probably from political motives, declined to go beyond having an addressed collar worn by every dog when the late epizooty of Rabies had been stamped out in London; the imposition of the muzzle and other measures were left to the initiation of the local authorities. As well ordain that every person shall wear a linen collar to protect him from cholera, as expect that a leather collar on a dog's neck will ward off Rabies. A similar belief was entertained during the invasion of cattle plague in 1865, some newspaper correspondents insisting that bovines should have necklets of onions round their neck, in order to keep off the deadly contagion. It is sufficient to state that Rabies is still lurking about, and at no distant period will cause destruction and alarm. The new Order, as will be seen elsewhere, makes the term Rabies applicable to cattle, sheep, goats and swine, besides horses, asses and mules; but it is as defective as all previous Orders, in that the enforcement of the measures is permissive, and the local authorities may or may not adopt them.

The new Order with regard to Glanders is a little in advance of the others which have been issued, as it corrects the extraordinary and inexplicable blunder which has hitherto existed in these, of considering Glanders and Farcy as two maladies to be controlled by different measures. It also recognises the principle of compensation for horses destroyed because of Glanders, and ordains some other measures; but it also fails in some most important points, and leaves the measures to be carried into effect by the local authorities.

It is something more than marvellous that, in dealing with such grave contagions, the Board of Agriculture cannot adopt common-sense measures, and make them a national, not a

vestry, business. Whether from perverseness, a tendency to shirk work and responsibility, or sheer indifference to the requirements of the country—let this cost what it may—the disjointed sanitary machinery which the local authorities represent is always brought into play unless extreme pressure is put upon the Board, and it is driven to take proper action. It must be gratifying to everyone who cares for the welfare of the live stock of this country, to find the London County Council administering a lesson in "how to do it" to the Board, and refusing to carry out its make-shift Order. Nothing could be in better form than the remonstrance of the Council, while its suggestions are marked by a most proper sense of what is needed to combat Glanders. The report of the Council will be found elsewhere in this Journal, and we draw special attention to it in the hope that other County Councils may imitate the praiseworthy action of that of London, and refuse to squander away ratepayers' money and harass horse-owners to no good end. If they are bent on doing their country a service, as well as their counties, they cannot follow a better example. The contagious diseases of animals will never be effectively dealt with until enlightened views as to the requisite measures are taught and impressed upon the Board of Agriculture, which is so purblind and sluggish in its movements.

ABORTION AMONG MARES IN SOUTH AMERICA.

THE *Live Stock Journal* of September 30th has a letter from a correspondent in South America, describing the damage effected by the epizootic abortion among mares in that region of the world. This accident or disease prevailed this year over a great extent of country—in fact it was observed everywhere —"from far south in Patagonia to far north in Santa Fé; on hard grass lands and on soft; on lucerne laid down, sandy, loamy, or clay soils, with natural or with well water, under every condition of mare life the same thing exists. The mares are in perfect health apparently." It occurs where conditions of soil, water, and grass are absolutely different, and among mares, more or less kept up, as well as those running loose, and wild or tame. It began last year when the mares were about eight months pregnant. In one estancia, 800 mares had aborted. A man had thirty imported Hackney mares from England, and everyone "picked" its foal. "A number of mares served by Ormonde played the same trick, and a great racehorse breeder lost heavily. In fact, it was all over the country, and seemed to me worse in mares crossed with English stallions than others. Now this year it has begun again in one troop of thirty mares, which were not affected last year." Many of the mares have died, and in these the fœtus was found reversed.

The occurrence of such a widespread outbreak of abortion in mares in the United States of America and in South America, as has been recorded at intervals in this Journal, and more particularly brought to notice in the letter from the above correspondent, is not only a most interesting and, in some

respects, unprecedented occurrence, but is also a very serious event, as it threatens to do grave injury to an important industry in that country, which appears to be so well adapted for horse-breeding. Anything like an extensive run of abortions among mares is almost unknown, for the equine species has generally been considered exempt from this accident, at least on the scale in which it often manifests itself amongst bovines. But in South America it has prevailed among mares to an extent which it has not yet, perhaps, done among cows, and has caused great havoc, not only among those which have been stabled or domiciled in some way, but also with those which are running about in a semi-savage condition. Domestication has always been supposed to be a strong predisposing factor in the occurrence of abortion, but here, at least, it does not seem to have had any influence. From the manner in which horse-breeding is conducted, and the large troops of mares kept for the purpose, it will be no easy matter to control such outbreaks, due as they must be to some all-pervading cause, and not to any merely local and ephemeral agency. This may be presumed from the statement that the accident, or rather the disease, has manifested itself over an immense extent of territory, exhibiting a wide diversity of soil, climate, and vegetation, and that it has spread without any assignable cause—such as is usually found to be operative in inducing abortion in mares in the Western world.

But in its chief features it bears the closest analogy to infectious abortion among cattle, and there is, therefore, the strongest presumption—if not absolute certainty—that infection is the cause of its origin, maintenance, and extension. Of course, this is only a presumption, so far as the equine species is concerned; for no such great outbreaks having occurred among mares in Europe, we have had no evidence of infection having played any part in mares "picking their foals," that occurrence being generally attributed to some local or accidental cause very limited in its action.

Investigation into the nature of the outbreak must necessarily be conducted in the country in which it prevails; but such investigation carried on in Europe with regard to epizootic abortion in cows, has led to the conclusion that it is really a germ disease, the germs being transmissible from the affected to the healthy, and so involving large numbers in the catastrophe. And the preventive and curative measures which have been adopted, and which were based on the discovery of special germs in the organs of generation of the affected creatures, have proved that the discovery is a reality.

Accepting the hypothesis that this South American abortion among mares is due to a similar agent, the same measures should be adopted as have proved successful in the case of bovines. These measures should be directed to the destruction of the infecting germs by disinfection, and scrupulous attention to the pregnant mares. Any mare with a discharge from the generative organs should be at once rigidly isolated from all the others, and kept and treated as suspected. When abortion begins, the mares which have aborted should either be separated in the same manner, or the healthy ones removed from the place where the accident has taken place—which is the best course. The foals and all the membranes which come away with them should immediately be buried deeply or burned (burning, when practicable, is the best mode of disposal), as well as all litter or other soiled material. If the accident has occurred on a pasture, this should not be used again for a considerable period, and the surface ought to be dressed with lime or salt. If abortion has taken place in a shed or stable, then disinfection must be carried out with chlorine gas, washings with chloride of lime, lime-wash, or carbolic acid, and all litter and manure either burned or mixed with some powerful disinfectant. Mares with a vaginal discharge should have the generative passage frequently washed out by means of a strong injection-pipe, the injection being either a 5 per cent. solution of Condy's fluid, a 2 per cent. solution of carbolic acid, or

a 2 per 1000 solution of corrosive sublimate. The tail and back parts of the hind-legs should also be sponged over with one of these solutions. Mares which have aborted ought also to be treated in the same manner.

These are the measures which are most likely to be attended with success in checking or preventing abortion in either mares or cows, and they ought to be sedulously and skilfully enforced to achieve such a result. How far they can be carried out on extensive runs must depend upon circumstances, but we are convinced that in proportion to the thoroughness with which they are applied so they will be effective.

Too much care cannot be taken in observing the pregnant mares, and at once separating any that have a vaginal discharge; when separated from the others, then treatment can be adopted; the injections may even be given them with safety. It would also be well to examine the stallions before allowing them to approach the mares, as any discharge from, or sore upon their organ of generation should debar them from use until they are well. The same disinfecting solutions may be employed for them as for the mares.

We have mentioned the stallions; because it may be that they are instrumental in infecting the mares, either by themselves receiving the virulent matter that leads to abortion when in contact with the females, or by becoming contaminated in some other way.

GLANDERS: ITS SPREAD AND SUPPRESSION.*

BY PROFESSOR WORTLEY AXE.

WHEN, sir, you did me the honour to invite me here to-day to engage the attention of your Society with some question of "general interest" to the profession I could not overlook the fact that an opportune occasion had arisen for the consideration of that now all-absorbing subject, glanders and farcy. Under any other circumstances than the present the introduction of this disease to your notice might have been regarded as an effort on my part in the rehearsal of ancient history, for there is hardly a veterinary medical society in the country which has not at one time or another—and in some instances many times exhaustively—discussed the clinical and pathological problems of the affection. I do not know that there is anything to be said in this connection that has not been said or written before, and with which the members of this Society and the profession as a whole are not more or less familiar. My purpose to-day is more especially to ask your attention to glanders in its sanitary relations, with the object of devising means for its extermination, and pressing upon the Legislature the urgent necessity of prompt and vigorous action in this direction. That a disease, the most deadly of its kind, should have been permitted to ravage our horse stock so long, and menace and destroy human life without a rational attempt at suppression, is a disgrace to the nation, and a distinct discouragement of the teachings and progress of veterinary sanitary science.

The lessons of epizootic outbreaks in this country, read by the light of recent experience, leave no room to doubt that glanders exists by sufferance only, and not by reason of any obstacle to its extermination. As with foot-and-mouth disease and pleuro-pneumonia, so with it extermination only awaits the resolute and judicious application of our present knowledge of sanitary science and police.

Thirty years ago, when comparative pathology had hardly advanced beyond the "airs and humours" of the ancients, and when veterinary sanitation was a crude empiricism, with no pretensions to the dignity of a science, the

*Read before the Southern Counties Veterinary Association, September 29th.

existing state of our sanitary legislation in respect of animal diseases might have been regarded as a possible means to the end it was designed to effect. Since then, however, our acquaintance with the nature of contagia and the diseases they induce has, thanks to this and kindred associations, been vastly extended, and the frontier of comparative pathology has been pushed forward in every direction. The mode of spread of animal plagues, the means by which infection may be intercepted, the vitality of pathogenic organisms, and the conditions which enfeeble and destroy them, are questions to which veterinary surgeons and others have devoted an immense amount of thought and patient work; and it is only bare justice to our profession to state that while veterinary sanitary science has devised ample means for the suppression of many contagious animal disorders our Legislature has continued to rely on statutes as impotent as they are antiquated, and on a system of administration as impossible of success as it is crude and vexatious.

There was a time, no doubt, when the stock-owners of this country failed to appreciate the teachings of preventive medicine, and when legislation was hampered and retarded by appeals and protestations of themselves and others whose interests they shared. If, however, they failed to recognise the merits of the one they did not overlook the futile and experimental character of the other; and from the view-point of to-day it will be admitted by all interested in animal plagues that our veterinary sanitary legislation has been for years "an aimless jumble of vexatious restrictions, embodying no rational attempt at suppression." As regards glanders and some other diseases, the same may be said of it now. Why this should be so, in face of the actual and possible sacrifices it involves, is a question which this meeting may reasonably submit to those in whose hands the economy and security of the country are entrusted.

Within the past few weeks public attention has been especially directed to the disease by the medical and lay press, owing, as it would seem, to the extraordinary loss of humanity resulting from it, and the opinion that glanders is now more prevalent than in the immediate past has consequently prevailed. Whether this be so or not is a question that cannot under existing circumstances be satisfactorily determined; but one thing is clear, as pointed out in the *Morning Advertiser*, viz., that the heavy fines recently inflicted on certain large horse-owners for disregard of the provisions of the Animals Order of 1886 have had the effect of awakening an unusual amount of vigilance and care in others, with the natural result that large numbers of animals affected with the disease have been marked out and condemned which, under ordinary circumstances, would have still remained unnotified and at large. It is by this extraordinary attention, arising out of fear of detection and the penalties that accrue from it, that the disease has been made to appear unusually prevalent, and not, I believe, to any actual increase in the malady itself. From the opportunities I have of being informed of the prevalence of glanders, I have no hesitation in saying that there is hardly a stud in London of any considerable extent in which the disease has not existed in the immediate past, and there are perhaps few in which it does not exist at the present time in an active or latent condition.

As to the general prevalence of glanders, available statistics show that during five years, from 1886 to 1890, only ten counties in England have altogether escaped the disease. In eight counties it has appeared every year, in nine it has occurred four years out of five, in five three years, in one two years, and in eight one year. The total number of outbreaks for this period in Great Britain is stated to be 5,000, in the proportion of 4,956 for England, 39 for Scotland, and 5 for Wales.

Although thus widely distributed, it is important to remark that the chief incidence of disease has fallen on London, in which there have been no less than

4,296 outbreaks, leaving the small proportion of 731 outbreaks for the rest of the country. There can be no doubt that whenever glanders presents itself in country districts, it is by horses removed from large towns, and in the majority of cases from our London stables. A few months ago I was called upon to inquire into an outbreak of disease in a stud of horses on a farm in North Yorkshire. The disease had been in existence for several months, and most, if not all, the animals in the stud were affected, and several had died.

Inquiry into the history of the horses, their incoming and their outgoing, brought to light the fact that about Christmas-time of last year a mare was purchased from a dealer who had bought her in London. This animal first showed signs of the disease and succumbed to it, and the infection spread and continued its work until the entire stud had to be destroyed. This however, although recommended, was not carried out until many weeks after the detection of the disease.

Inquiry into an outbreak recently existing on a farm in Sussex revealed a similar set of circumstances, with the result that three young horses that had never been off the farm had to be destroyed. If we consider it in relation to counties, we find that Middlesex (except London) stands first with 248 outbreaks, and the adjoining counties of Essex, Surrey, Kent, and Hertford follow in the order named. The outbreaks in all the other counties of England and Scotland for the five years under consideration do not exceed 241, or 7 less than were recorded for Middlesex alone. I use these statistics, not with the idea of giving you an insight into the actual prevalence of glanders in the country, but rather to show approximately the extent of its distribution and the relative proportions in which it exists in different divisions and counties of the kingdom. As Dr. Fleming recently pointed out, the statistics usually quoted are quite unreliable and afford no adequate notion of the extent of mortality arising out of it. It is perfectly clear, however, from these figures that glanders has its home in London, and that the chief offshoots of infection are in the adjoining counties. This centralised condition of the disease is a distinct advantage from a sanitary view-point, inasmuch as the sanitary machinery when brought into operation will be in touch, and if under one authority may be made to act in harmony and with much greater effect than can be produced when centres of disease are numerous and widely scattered. The prospect of success of measures of suppression is further heightened by the fact that the horse population of London is for the most part a settled one, and therefore favourable to continued observation and inspection.

Upwards of 18,000 horses die or are destroyed each year in the metropolitan district. Of this number probably one half succumb to accident and infirmity. Of the remaining 9,000 that die from disease, it may, I think, be safely affirmed that 3,000 or 33 per cent., are victims of glanders. If we allow for each animal so affected £25, we get £75,000 as the direct loss. To this sum may be added £20,000 for loss of services and other expenses, giving together a total annual loss of £95,000 for London alone. Such a sacrifice of our horse stock, arising out of what is unquestionably a preventible disease, you will say with me should not be allowed to continue. Great, however, as this may be, the possibilities connected with the prevalence of glanders are so grave and terrible that no Government having the security of the country at heart can consistently permit its continuance.

Although the blessings of peace have long been preserved to us, international complications with hideous war as their outcome will surely arise in the future as in the past. In anticipation of such an event, horse-owners of this metropolis have been subsidised, and contracts entered into, whereby remounts for our army may in certain contingencies be drawn from their studs. What would be the result of such a course under existing circumstances is not difficult to foresee. Glanders is admitted to be difficult to diagnose, and

its introduction into our ranks in the course of a campaign would be inevitable —in such numbers, too, as would certainly cripple, if it did not actually paralyse, both our cavalry and artillery forces. Millions have recently been expended in strengthening our second line of defence, and it would be a crime if for two or three hundred thousand pounds the first should be permitted to risk the ignominy of defeat and disgrace. It is needless to point to the sacrifice of human life as a plea for the extermination of glanders in the absence of any justification of its continued presence. Glanders is a dangerous excrescence, which sanitary science, backed by the imperial purse, can at any time suppress, and its claims on the immediate attention of Government are not inferior to those of any contagious (animal) disorder.

Existing legislation in regard to glanders and farcy is governed by the Animals Order of 1886, wherein the provisions of the Act of 1878, as well as certain sections of the Act of 1886, are made to apply to them.

It hardly need be pointed out that the two common terms, "glanders" and "farcy," express different local manifestations of the same disease; notwithstanding this, however, we find an important difference in the sanitary legislation prescribed in the two cases. For instance, in the case of farcy, it is competent but not compulsory on a local authority to prohibit or regulate the movement of diseased and contact animals out of any stable or other place; but this control may cease whenever the local authority deem it expedient, or when the indications of farcy are no longer present. So that when, as is frequently the case, the symptoms of the malady disperse, the animal, though still diseased, is permitted to go at large and spread infection without let or hindrance. The law gives no power to local authorities to slaughter, excepting where animals actually diseased are exposed on public highways or in public places. But what shall we say of an Act that permits glandered horses to be kept alive for several weeks, with no better provision of bringing about their ultimate destruction than a set of harassing restrictions and costly prosecutions?

This state of things is clearly sanctioned by Article 62 of the Animals Order of 1886, which provides that where a person having a horse, ass, or mule in his possession, or under his charge, gives notice to a constable that the horse, ass, or mule is affected with glanders, or a person is convicted of an offence against the Act of 1878 by reason of his having failed to give such a notice in respect of any horse, ass, or mule; then if at any time thereafter it appears to the Local Authority, on a special report of a veterinary inspector or veterinary surgeon, that the horse, ass, or mule is alive at the end of fourteen days after the receipt by the Local Authority of that special report the Local Authority *may, if they "think fit,* within seven days thereafter, serve on the owner of the horse, ass, or mule a notice in writing requiring him to slaughter it or to permit them to slaughter it within a reasonable time specified in the notice." Should the owner for any reason fail to comply with this request, the Local Authority is powerless to undertake the duty themselves, but may harass the owner into submission by repeated prosecutions and protracted restrictions—by a system of coercion that makes co-operation impossible and legislation hateful.

It has been said by a distinguished authority on glanders that "the delay allowed by the Act before compulsory slaughter of glandered horses can be enforced *does not* interfere with the effective stamping out of the disease," and we are told that the notion to the contrary is so much fiction, "founded on perusal of books." I am one of those who entertain this perverse view of the question, and I can assure you the conviction has not come to me through any such channel.

In the first place, compulsory slaughter, as I have already shown, is not provided for by any Act, and therefore cannot be enforced; but if it were

otherwise, it surely will not be contended that to permit animals to live in the midst of others for two or three weeks when suffering from glanders is not, under existing circumstances, and having regard to the nature of the malady, an interference with the effective stamping out of the disease. It is true the law provides that horses affected with glanders must, as far as practicable, be kept separate from others not so affected; but in this London of ours, with its limited stable accommodation, separation, such as is contemplated by the Act and required as a sanitary measure, is seldom possible. General experience everywhere confirms the statement that any and all conditions that favour the spread of glanders will delay its effective stamping out. It is no answer to the question to say, as has been said, that a man having diseased horses in his stud may be harassed into submission by prosecutions and penalties. This operation of coercion is not brought into action for three weeks after the discovery of the infected centre, What may happen during those three weeks of respite? Numbers of animals may be infected, and, while still incubating the disease, pass from observation and spread infection elsewhere. Would not such a state of things interfere with the effective stamping out of the disease? Against the statement which has recently appeared that "not once in ten years in the experience of any inspector has this been found either a danger or difficulty." I will submit the question, Is there an inspector in the country who does not recognise the danger of delay in dealing with infected animals at all times, and the obvious difficulties it entails? If I were permitted an answer, I should say not one—not even the author of the statement himself, who has elsewhere admitted that preventive slaughter is most effective in the stamping out of disease when early carried out.

It now only remains for me to indicate in what way its extermination may be brought about. In doing so it will be understood that I make no distinction between glanders and farcy. For the purpose of this paper they have been regarded as a pathological unit.

All sanitary legislation to be effective must be based on considerations of the nature of the disease to be overcome—its origin, mode of spread, zoological range, and geographical distribution.

Glanders is a specific contagious affection, for the most part assuming a chronic character, often obscure in its clinical characters, and always fatal. In this latter connection some slight discrepancy and confusion appears to exist in the minds of some, and especially in that of the eminent authority to whom previous reference was made. In a letter to the *Times*, Mr. Hunting distinctly affirms that glanders is "incurable;" and while admitting it to be due to the poison of farcy, assures us that some few cases of the latter "totally recovered." It need hardly be urged that if glanders and farcy are one and the same disease, distinguished only by outward manifestations, then it follows that, glanders being incurable, "total recovery" from farcy is logically impossible.

The incubation period of this malady, there is reason to believe, is indefinite. It is perfectly true, as I have repeatedly observed, that manifestations of the disease follow upon inoculation at the expiration of from seven to nine days, but we are at present unable to fix a period to those numerous cases which follow upon the ingestion of the poison, and others which possibly result from direct pulmonary infection.

Recent research has made it clear that glanders owes it origin to a specific virus, the active element of which is a minute organism or microbe, and we owe our acknowledgment to Mr. Sherrington, Professor Superintendent of the Brown Institute, for the development of an important fact in respect to its vitality. Mr. Sherrington has demonstrated by laboratory experiment that the bacilli of glanders may live unharmed in ordinary London water for twenty-

six days in the month of August. This is a period of the year when our horses are drawing largely on street troughs for their supply of water, and the fact discovered by Mr. Sherrington shows in the clearest light the danger of drinking-troughs, and the necessity for their daily cleansing so long as glanders prevails.

Mr. Sherrington has also made known another not less valuable piece of information to the cause of protective medicine, viz., that this same bacillus may be destroyed in three days by exposure to ordinary sunlight.

As to the mode of access, it cannot be said that science has fully determined the channels through which the virus proves effective in the induction of the disease. It is quite certain, however, that it does so when brought into contact with a wounded surface, whether that surface be skin or mucous membrane. Virus swallowed with food and water is unquestionably productive of the disease; but whether this result follows uniformly, or is dependent upon special conditions of the membrane through which it acts, cannot be stated. The inhalation of the contagion by healthy animals is an unavoidable result of their cohabitation with diseased ones: but the propagation of the malady in this manner does not present itself as an established truth. Of these several modes of access direct inoculation of the poison by skin wounds is probably the most common. Wisps, brushes, and cloths, used for the purpose of cleaning horses, often serve to convey the poison from the nostrils of the sick to the broken skin of the healthy.

The zoological distribution of glanders among our domesticated animals needs consideration in any future legislation, especially in regard to goats, which are unquestionably receptive of the poison. No less than three instances of these creatures so suffering have been brought to my notice in the course of inquiry into outbreaks of the disease among horses. As goats are frequently kept in large horse establishments in this metropolis and other commercial towns, and allowed to run at large both in stables and the streets, it is most desirable that provision should be made to deal with them as with horses, asses, and mules, to which legislation is at present restricted. The drawings now before me represent the pulmonary and nasal lesions presented in one of the cases referred to. In this instance a herd of milch cows were housed in stables immediately adjoining the infected horses, and infected goats were free to pass from one apartment to the other. The possibilities of such a state of things are serious, and suggest at once the danger of human infection, besides a free distribution of the virus throughout the place, which the severity of the outbreak in question clearly denoted.

The geographical distribution of glanders extends over the whole civilised world. England, however, imports but few horses at present. There is, however, reason to think that ere long a marked increase in this direction will take place, and it will be for this country to guard herself as far as possible in future legislation from the introduction of the disease from foreign countries.

By the courtesy of my colleague, Professor Macqueen, I am permitted to add to this paper an interesting translation of statistics of glanders in European countries, which have been tabulated by M. Soly and reported in *La Presse Veterinaire.*

Return of Losses from Glanders.

The following statistics possess great interest just now when glanders is attraciing attention in London, and when probably fresh legislation will be attempted.

GERMAN EMPIRE, 3,522,316 horses. Census 1883.

1880 lost 2293	1883 lost 2002	1886 lost 1524	1889 lost 1771
1881 „ 2656	1884 „ 2409	1887 „ 1498	1890 „ 1281
1882 „ 2824	1885 „ 1706	1888 „ 1504	

PRUSSIAN ARMY, 69,512 horses. Census 1888.

1886 lost 17	1887 lost 2	1888 lost 3	1889 lost 27

1890 lost 7.

BAVARIAN ARMY, 10,381 horses. Census 1890.

1890–91, no loss from glanders.

AUSTRIA, 1,463,283 horses in 1880.

1881 lost 593	1883 lost 497	1885 lost 510	1887 lost 393
1882 „ 616	1884 „ 422	1886 „ 378	1888 „ 379

1889 lost 344.

HUNGARY, 2,158,870 horses in 1880.

1889 lost 815 | 1890 lost 646.

BELGIUM, 271,074 horses. Census 1880.

1880 lost 507	1883 lost 365	1886 unknown	1888 lost 197
1881 „ 481	1884 „ 207	1887 lost 155	1889 „ 158
1882 „ 366	1885 „ 168		

HOLLAND, 270,456 horses. Census 1882.

1880 lost 80	1883 lost 55	1886 lost 48	1888 lost 33
1881 „ 74	1884 „ 61	1887 „ 47	1889 „ 41
1882 „ 58	1885 unknown		

DENMARK, 347,561 horses. Census 1881.

1880 lost 59	1883 lost 20	1886 lost 1	1889 lost 9
1881 „ 36	1884 „ 7	1887 „ 10	1890 „ 1
1882 „ 28	1885 „ 1	1887 „ 8	

NORWAY AND SWEDEN, 469,619 horses in 1882.

Norway only.

1879–80 lost 1	1882 lost 9	1884 lost 9	1889 lost 1
1881 „ 1	1883 „ 4	1885–8 none	

Sweden only.

1879–80 lost 19	1883 lost 7	1886 lost 3	1888 lost 3
1881 „ 19	1884 „ 9	1887 none	1889 „ 5
1882 „ 250	1885 „ 7		

FRANCE, 2,837,552 horses. Census 1882.

1886 lost 621	1888 lost 580	1890 lost 685
1887 „ 617	1889 „ 790	1891 „ 786

FRENCH ARMY, 100,000 horses. 1882.

Put down in consequence of glanders or farcy.

1879 lost 714	1883 lost 122	1887 lost 55	1890–1–2,
1880 „ 303	1884 „ 140	1888 „ 77	200 or more
1881 „ 290	1885 „ 161	1889 „ 97	(estimated)
1882 „ 205	1886 „ 203		

GREAT BRITAIN AND IRELAND, 1,909,200 horses. 1885.

Killed, glanders or farcy.

1880 lost 2110	1883 lost 1244	1886 lost 1114	1889 lost 2246
1881 „ 1720	1884 „ 1027	1887 „ 1482	1890 „ 1760
1882 „ 1389	1885 „ 927	1888 „ 1581	of which 782 in London alone.

RUSSIA, 21,203,907 horses. Census 1887.

1876–80, 1897 cases of glanders.

1881 lost 1200	1883 lost 1009	1885 lost 1314	1887 lost 1249
1882 „ 1053	1884 „ 1070	1886 „ 1600	1888 „ 1786

1889 lost 2114

In 1891, Berezow says, 1000 cases in the Government of Saratow alone.

SWITZERLAND, 98,363 horses in 1886.

Died or were killed.

1880 lost 39	1883–4 lost 31	1887 lost 23	1889 lost 28
1881 „ 26	1885 „ 37	1888 „ 40	1890 „ 26
1882–3 „ 26	1886 „ 37		

ITALY, 660,123 horses in 1882.

1882—122 cases of glanders.	1888—185 (communes) parishes infected.
1883—225 „ „	
1887—114 stables infected.	1890—131 „ „ „

Sanitary law, 28th December, 1888. Statistics incomplete.

PORTUGAL.

1890, 39 cases, of which 11 occurred at Lisbon.

ROUMANIA.

1887 lost 155	1888 lost 203	1889 lost 182	1890 lost 152

BULGARIA.

1890, 15 parishes (communes) infected.

The regulations in force in the different countries make the above tables of greater value. Thus it will be noticed that France and England give no compensation, and fail to decrease the outbreaks. The regulations in force in Denmark seem to be very successful.

Germany.—The sanitary police carry out the orders of 1880 and 1881. All horses affected with glanders must be slaughtered by order of the police. The owners of animals slaughtered by order of the police have a right to an indemnity representing three-fourths of the value.

Austria and Hungary.—The law of 1880 prescribes that infected or suspected animals must be "put down." Contact animals may be slaughtered by order of the Local Authority. The State repays the full price of all animals put down which may not be found glandered *post mortem*. The provinces have authority to grant some indemnity for animals put down and found glandered *post mortem*.

Holland.—The law of 1888 prescribes the slaughter of all animals attacked by glanders. Suspected animals may be slaughtered by order of the Burgomaster. The owner of animals slaughtered has the right to an indemnity equal to the full value if the animals are found healthy, to the half value if the animals are found glandered.

Belgium.—The laws and orders of 1882 and 1889 prescribe that glandered horses must be put down. All horses which have been in contact with glandered horses may be put down by order of the Minister of Interior. The owner of a glandered horse receives from 100f. to 150f. as indemnity. The owner of a suspected animal has the right to one half the value of the subject. Recently the indemnity in suspected cases put down and found not glandered has been increased to four-fifths the value of the animal.

Denmark.—The law of 1857 prescribes the slaughter of all glandered horses. The State pays one half the value of horses slaughtered and found glandered. Owners of horses found healthy receive compensation equal to full value.

Sweden.—The laws of 1885 and 1887 prescribe that horses attacked by glanders shall be put down, and horses which have been in contact with glandered horses shall be isolated for three months. An indemnity of half the value is awarded the owner of horses slaughtered and found glandered, and another of full value is granted to owners of horses slaughtered and found healthy.

Norway.—Law of 1882 which is similar in conditions to that of Sweden.

France.—The law of 1882 prescribes the slaughter of animals attacked by glanders, but no indemnity is provided in any case.

England.—Laws 1878, 1884, and 1886 familiar.

Russia.—In Russia no law exists concerning glandered horses. Since 1885 some compensation to owners has been granted for glandered horses put down. In some districts glanders is considered non-contagious! Waronzow estimates the real number of glandered horses in European Russia as 90,000, being a trifle more than four per thousand of the whole number; besides, the glandered horses which proceed from Russia and which are slaughtered in Austria and Germany are always numerous. In a single hospital twenty-eight persons died of glanders in seven years.

Switzerland.—Each canton has its own regulations. Nearly all grant some compensation to the owner of horses slaughtered as glandered or suspected of being glandered.

The legislative and administrative requirements necessary to the suppression of glanders are clearly indicated in the foregoing considerations.

The disease is essentially contagious and incurable, and there is therefore no justification of any sort for keeping animals alive when suffering from it. It threatens and destroys human life, and inflicts immense loss on our commercial community. Under these circumstances slaughter of the diseased becomes at once an indispensable and rational means of suppression, and it is hardly necessary to add that to be effective this should be prompt and compulsory.

Our experience of permissive legislation during the past thirty years has been both painful and costly, and in face of the recent success of compulsory measures in stamping out foot-and-mouth disease and effecting the almost complete extermination of pleuro-pneumonia, its continuance would be not only useless, but actually mischievous.

The question of compensation naturally arises here, and I think everyone conversant with the working of sanitary measures will regard this as an indispensable adjunct to compulsory slaughter.

The principle of compensation has been recognised and acted upon in dealing with contagious diseases of sheep and cattle, and its application to glanders promises results by no means inferior to those already attained.

It is most desirable in any attempt to stamp out glanders that the sympathy and co-operation of horse owners should be assured, and this can only be done by a fair and reasonable allowance for the sacrifices they are called upon to make. The relation of our large studs to our army service gives the question an imperial character, and in such light, it appears to me, it should be recognised and treated.

The suppression of the disease would confer benefits upon the State above everyone else, and it is not asking too much of the State to bear the chief burden of the cost.

To what extent compensation should be made is a point upon which there does not appear to be complete agreement. I think, however, that half the value should be allowed to owners for horses found either before or after death to be suffering from the disease, and that full compensation paid where animals killed on suspicion are afterwards declared to be free from it. A liberal measure of compensation will not only tend to hasten the extinction of the

disease, but it will considerably reduce the cost of the machinery necessary to effect it. Among other things it will encourage early notification and the active co operation of the public, which are of all other forms of assistance the most desirable in sanitary service. Notification is of the first importance in the work, and should be rendered compulsory both on owners and veterinary surgeons, and penalties should follow conviction in all cases of default.

For the purpose of this undertaking all stables in the metropolitan district, or in such part of it as may be deemed necessary, should be registered and open to inspection at any time the sanitary authority may appoint. It might also be desirable to provide for the registration of all suburban farms, common ground, and open pasture where horses are taken in to agistment, and also for their inspection.

All horses in an infected stud should be branded on the hoof, and none of them should be sold within a certain time after the subsidence of the outbreak without a licence from the sanitary authority. Where horses are sold from a recently infected stud the name and address of the purchaser should be lodged with the same authority.

Horse owners should be supplied with a printed statement of the symptoms indicative of glanders and farcy; and for the purposes of notification all horses having a discharge from the nostrils and enlargement of the glands beneath the jaw, or swelling of the legs with boils or sores upon them should be deemed to be suspicious.

Disinfection of stables, inspection of slaughter-houses, sale yards, and cab ranks, and the prohibition and regulation of movement of suspected animals are matters to which attention would be given.

Having shown the necessity for suppression of this disease, and indicated generally the sanitary measures by which it may be effected, it remains to consider the possible cost of the undertaking, and the body into whose hands it may be confided.

Of course anything that may be said on the question of cost must be accepted as a mere estimate. This, I think, may be based indirectly on the returns for the year 1891, when 2,435 cases were recorded. I think upon this we should be safe in saying that under the searching precautions I have laid down, 4,000 cases of glanders and farcy would be notified or brought to light during the first year. Assuming the average value per head of this number to be £25, and compensation was allowed to the extent of one half the amount, we should incur an outlay of £50,000. It may be computed that 1000 horses slaughtered on suspicion would be found on *post-mortem* examination to be free from the disease. Allowing for these an average of £25 per head would bring the outlay for compensation to £75,000. Add to this £20,000 for expenses, and we get a total expenditure for the first year of £95,000.

With the removal of such a number of affected animals, and the exercise of the sanitary measures prescribed, a great diminution in the prevalence of the disease might reasonably be expected; such a reduction, I think, as would render an expenditure of £30,000 equal to the requirements of the sanitary department for the second year. If for the third year we allow £20,000, and £20,000 for the subsequent year, the disease would then in all probability have been stamped out for the sum of £165,000.

An important discovery, however, has recently been announced, which, if possessing the virtues with which it is credited, bids fair to reduce this last amount by £25,000 to £30,000. In a letter to the *Times* of August 24th Dr. Fleming drew attention to a product of the virus of glanders termed "mallein." This agent, we are told on the authority of M. Nocard, of Alfort, Degive of Brussels, and others, is "a sure test for the existence of glanders in suspected cases." A minute quantity, says Dr. Fleming, injected beneath the

skin of a healthy horse produces very little, if any effect; while the same amount introduced in the same manner into one that is infected gives rise to intense fever and other unmistakable symptoms. Again and again this substance has shown horses to be diseased when every other means had failed. Armed with such an agent as this is said to be, the diagnosis of glanders will be made comparatively easy and certain, and the sacrifice of horses for diagnostic purposes may be altogether dispensed with. As I have already observed, this will effect a saving of between £25,000 and £30,000.

As to the authority into whose hands the administration of the necessary means of suppression should be placed there can be no room for discussion. Local authorities with their permissive measures and disjointed action have proved a costly failure. For this, however, they are not to blame. The task imposed upon them was an impossible one from the first, and no one knowing anything of human nature and sanitary administration could seriously believe that the former had lost all sense of the burden of local taxation, or that the latter was dearer to the national heart than gold. Local authorities have played the part of an innocent buffer between a neglected agriculture and the Chancellor of the Exchequer. In that capacity they have won golden opinions from ministers of all political creeds, but they have utterly failed as a part of the veterinary sanitary service of the country.

Our recent experience of sanitary administration in connexion with pleuro-pneumonia and foot-and-mouth disease clearly points to the Agricultural Department as the most competent to undertake the suppression of glanders. It would, however, be most undesirable to make any attempt in this direction until the law has been altered to meet the requirements of the case.

Table showing the Number of Years each County has suffered from the Disease from 1886 *to* 1890, *and the Number of Outbreaks in each County for that Period.*

County.	No. of Years.	No. of Outbreaks.
Bedford	4	12
Berks	3	7
Bucks	4	8
Cambridge	4	7
Chester	4	7
Cornwall	3	6
Cumberland	0	0
Derby	3	7
Devon	1	2
Dorset	0	0
Durham	1	1
Essex	5	89
Gloucester	1	3
Hants	5	20
Hereford	0	0
Hertford	5	38
Huntington	1	1
Kent	5	49
Lancaster	5	20
Leicester	1	1
Lincoln	4	8
Middlesex	5	4517
Monmouth	1	2
Norfolk	0	0
Northampton	1	0
Northumberland	0	3

County.	No. of Years.	No. of Outbreaks.
Nottingham	4	5
Oxford	0	0
Salop	0	0
Somerset	3	4
Stafford	3	4
Suffolk	1	1
Surrey	5	67
Sussex	4	19
Warwick	4	28
Westmoreland	0	0
Wilts	2	2
Worcester	4	6
York	5	15

THE SUPPRESSION OF GLANDERS.

At last, after years of delay, a new order has been issued by the Board of Agriculture, for more effectually dealing with glanders, and several important changes have been made in the measures hitherto relied upon for combating this disease. But notwithstanding the painful experience of a quarter of a century, of the incompetency or unwillingness of local authorities to effectively carry out such measures as may be necessary for the stamping out of contagious diseases among animals, this new order is left to the discretion of these impotent bodies, and everything contained in it with regard to suppression is permissive. The word "may" is introduced instead of "shall," and this, it strikes us, is merely a resort to the only too well known habit of the Agricultural Department of evading its duty and sparing itself trouble. This habit has cost the country millions of pounds, and it will continue so unless Parliament takes the matter in hand.

The order, which came into force on October 17th, classes Glanders and Farcy as one disease, and any animal suffering from them is to be destroyed; all infected places are to be placarded, and the movements of animals therein are to be controlled by the local authority, this authority being further empowered to brand or mark any suspected animal; while it is also ordained that such animals are to be detained and isolated, and any others which have been exposed to infection may be slaughtered.

Under Article 19 it is provided that (1) a local authority may, if they think fit, and when required by the Board of Agriculture, shall cause to be slaughtered (*a*) any diseased or suspected horse, ass, or mule; and (*b*) any horse or mule being or having been in the same field, stable, shed, or other place, or otherwise in contact with any diseased horse, ass, or mule, or having been in any way exposed to the infection of disease. (2) The local authority shall out of the local rate pay compensation as follows for any horse, ass, or mule slaughtered under this article: (*a*) where the horse, ass, or mule slaughtered was diseased, the compensation shall be one-half of its value immediately before it became so diseased; but so that the compensation do not in any such case exceed £20; and (*b*) in every other case the compensation shall be the value of the horse, ass, or mule immediately before it was slaughtered. (3) Provided that if the owner of the horse, ass, or mule gives notice in writing to the local authority or their inspector, or other officer, that he objects to the horse, ass, or mule being slaughtered, it shall not be lawful for the local authority to cause that horse, ass, or mule to be slaughtered, except with the further special authority of the Board of Agriculture first obtained.

Article 20 deals with the mode of ascertainment of value and is very curious;

and article 21, which is new, provides as to the withholding of compensation as follows:

(1) A local authority may, it they think fit, withhold, either wholly or partially, compensation in respect of a horse, ass, or mule slaughtered by their order under this order where the animal was in their opinion diseased at the time of its being brought into their district. (2) A local authority before determining under Sub-section 7 of Section 30 of the Act of 1878, or under this Article, to withhold either wholly or partially compensation, or other payment in respect of a horse, ass, or mule slaughtered by their order under this order, shall give to the owner of the horse, ass, or mule an opportunity of making representations to them respecting the facts and circumstances of the case, and shall consider the same.

With regard to the disposal of carcasses the order says:—23 (1). The carcass of every horse, ass, or mule that was diseased at the time when it died or was slaughtered shall be disposed of by the local authority as follows: Either the local authority shall cause the carcass to be buried as soon as possible in its skin in some proper place and to be covered with a sufficient quantity of quicklime or other disinfectant and with not less than six feet of earth, or the local authority may, if authorised by licence of the Board of Agriculture, cause the carcass to be destroyed under the inspection of the local authority in the mode following: The carcass shall be disinfected and shall then be taken in charge of an officer of the local authority to a horse slaughterer's or knacker's yard, approved for the purpose by the Board, or other place so approved and shall be there destroyed by exposure to a high temperature or by chemical agents.

The compensation is to be paid out of the local rates, and we expect to hear a good deal of grumbling at this arrangement, after what the ratepayers have already been compelled to throw away uselessly in this way. We can only hope, though we can scarcely expect, that the disease will be controlled and diminished in extent, if not eradicated. Nothing whatever is said with regard to the risk of importing the disease from abroad or from Ireland, and, of course, no provision is made for such a contingency.

INOCULATION OF GLANDERS.

In the *Centralblatt für Baktériologie* for July, Tedeschi states that he has experimentally inoculated Glanders into various animals, applying the virus directly to nerve centres. From his experiments he draws the following conclusions:—(1) Animals very liable to glanders succumb much sooner when inoculated in the brain and spinal cord than when the virus is applied to another part; (2) animals classed as immune, and as in some measure resistant to glanders, die rapidly when inoculated in nerve centres; (3) the virus is strengthened by inoculation into the nerve centres of sensitive animals. and still more so when animals regarded as immune are employed. Thus, a small quantity of meningeal exudate from a dog killed by inoculation into the brain, when introduced beneath the dura mater of another dog causes the death of the latter more quickly than the most virulent culture would. This increase of virulence is not a special feature of the meningeal exudate in such a case, the result being equally manifest in material from other parts of the body—as for example, slpeen pulp.

TEXAS FEVER IN BALTIMORE.

Texas Fever seems to create almost as much alarm in some of the United States of America, as Cattle Plague does in Europe. The Baltimore Cattle dealers have recently petitioned the Governor of Maryland to prohibit the

introduction of Texas cattle into the State, and our respected friend, R. Ward, F.R.C.V.S., who is the official Veterinary adviser, strongly supports their request, or if actual exclusion cannot be granted, he recommends keeping these cattle apart from the others and slaughtering them in a special abattoir which is now being built.

A NEW RABIES ORDER.

THE Board of Agriculture published in the *Gazette* of October 14th a new Rabies Order, which extends to England and Wales and Scotland, and will take effect from November 1st. It will apply to cattle, sheep, goats, and swine, besides horses, asses, and mules, and under the Contagious Diseases (Animals) Act compensation will be allowed in certain cases were slaughter has been found necessary. With regard to dogs eaery local authority will have the right to cause the seizure of those which are strayed within their district, subject to the usual provisions as to the period of detention, the giving of notice to the owners, the recovery of penalties for infringement of the order, and the repayment to the authority of reasonable expenses incurred. If not claimed within three days, a dog may be slaughtered; or, where the owner has had notice, within two days. These provisions do not apply to the county and City of London. Every person who has possession or charge of any diseased animal must at once give notice to a constable who will transmit the information to the local Inspector and to the Director of the Veterinary Department of the Board of Agriculture. Inspectors are empowered to take prompt action where they suspect the existence of rabies; and the local authority, if needful, may warn the public by placard of the presence of the diseese at any particular place. Local authorities may further issue such regulations as they think fit for the muzzling of dogs, or for otherwise keeping them in control; for prohibiting the movement of animals suffering from rabies; for cleaning infected stables, kennels, and other places; for the disposal of carcasses; and for the production of licences and the names and addresses of owners.

GLANDERS AND THE LONDON COUNTY COUNCIL.

AT a meeting of the London County Council held on October 18th, the Public Control Committee reported that they had had under consideration the subject of the administration of the Contagious Diseases (Animals) Act in the County of London, with special reference to the new Glanders or Farcy Order of 1892. The main objects of the several Contagious Diseases (Animals) Acts and the Orders of the Board of Agriculture thereunder were to stamp out or reduce the various contagious diseases in animals, such as cattle-plague, pleuro-pneumonia, glanders and farcy, foot-and-mouth disease, anthrax, swine fever, rabies, &c. Glanders and farcy have always formed the main portion of the Council's work under the Acts, as this disease had hitherto been permanently located in London, while the other diseases, particularly cattle-plague, foot-and-mouth disease, and pleuro-pneumonia, had only appeared intermittently and had usually disappeared after energetic measures had been taken to stamp them out. The committee found that the law in force with regard to glanders and farcy in England had been until now considerably behind that of other European nations. In other countries, for instance, compulsory slaughter was required by law, whereas in England slaughter had been only necessary in cases of glanders, and then only after the expiration of three weeks or upwards from the time the disease had become known to the local authority, while in cases of farcy, which was the same disease with different manifestations, slaughter had never been compulsory. From returns made to the Board of Agriculture it would appear that from 80 to 90 per cent. of the

reported cases of glanders and farcy in Great Britain occurred in London, and that the number of animals affected by these diseases was an increasing one. In the year 1881, 1,482 animals were attacked in London, while in the year ended March 31 last the number was 2,626. In July and August last the increase continued, and, unfortunately, there were cases in which the disease was contracted by human beings, and the persons affected died. In those circumstances the committee addressed, in August last, a communication to the Board of Agriculture, urging the necessity of providing more effectual means for dealing with these diseases, and suggesting the desirability of putting an end to the fallacious distinction which existed in the present law between glanders and farcy. The Board afterwards prepared the draft of the present Order, and asked the Council for any observations it might wish to make thereon. The Council, in reply, submitted several suggestions whereby in its opinion the order would be strengthened and made more effective. These included:—1. The insertion of a provision for compulsory notification of cases of disease by veterinary surgeons, following the principle already adopted in the case of infectious disease in man. 2. Power to require the isolation and branding of suspected animals. 3. That a certificate of freedom from contagious disease of a veterinary inspector should be necessary before horses could be submitted for public sale. 4. The extension of the powers of inspection. 5. The sanitary regulation and supervision of trade stables. 6. That compensation should not be payable where the animal slaughtered was diseased when is entered the district of the local authority ordering its slaughter. Of these the Board only incorporated in the Order that portion of the second suggestion relating to branding, and the whole of the sixth suggestion relating to the withholding of compensation in respect of diseased animals brought into the country; stating that the remainder could either not be dealt with under existing statutory power, or, as in the case of compulsory notification of disease by veterinary surgeons, that it would be better in the first instance to attempt to carry out the Order without it. The committee greatly regretted that the Board of Agriculture did not see its way to meet the Council's wishes on these points, as they attached great importance to the principle of compulsory notification, while the condition of London stables was in many cases notoriously bad and conducive to the spread of disease amongst horses. After giving the subject the most careful consideration, the committee came to the conclusion that a permissive Order would be ineffectual as a means for stamping out glanders and farcy in England, and that to be effective the law must be uniformly administered throughout the country. They submitted the following recommendation:—"That, having regard to the necessity for uniform action throughout the country for successfully dealing with glanders and farcy, and to the heavy expenditure that compensation without contribution from money voted by Parliament would impose upon the rates, and also to the fact that the Order does not include several provisions to which the committee attach great importance, the Council do not enforce the new provisions of the Glanders or Farcy Order, 1892, as to compulsory slaughter and compensation."

The recommendation of the committee was agreed to.

It is evident from the recommendation of the committee that it has a much better notion of the measures necessary for the extirpation of glanders than the Board of Agriculture. It would perhaps be a good thing for the United Kingdom if the entire management of the contagious diseases of the domesticated animals were entrusted to such an enlightened and independent body.

EXTIRPATION OF THE THYROID GLAND.

In *A Medicina Contemporanea* for August, 1892, there is a summary of Moussu's thyroidectomies, which yielded far less of a mortality than Gley's. One adult rabbit out of twelve died; two of another series of seven succumbed.

The author holds that, when proper precautions are observed, the operation proves less fatal than was hitherto believed. Similar favourable results were obtained in adult solipeds, ruminants and swine. He succeeded in maintaining them without morbid symptoms for several months after thyroidectomy.

In young animals, extirpation of the thyroid was followed by distinct arrest of development, with evidences of myxœdematous cachexia.

TREATMENT OF FISTULA OF STENONS' DUCT BY ATROPHY OF THE PAROTID GLAND.

Most veterinary surgeons have met with cases of fistula of the parotid duct in the horse which were most difficult to cure, and some of which appeared to be altogether hopeless. Skilful surgery has, however, succeeded with cases which had proved refractory to almost every kind of treatment, and in closing the fistula has left the gland unimpaired and the duct pervious. Some practitioners still resort to destruction of the gland when the ordinary means of healing the wound have failed, and this was the course resorted to by Bergeron, who, in the *Annales de Méd. Vétérinaire* for March, describes a case of this kind which greatly baffled him, but which he ultimately succeeded in remedying. The fistula appears to have been on the cheek—a situation which we have considered less serious than when the opening into the duct is at the angle of the jaw—and was treated with caustics and other agents without avail. It was then decided to induce atrophy of the parotid gland by the injection into it, through the wound, of a 20 per cent. solution of lactic acid. This caused great swelling, not only of the gland, but the whole of the head, followed by the formation of abscess in the parotideal region. This abscess was opened on the ninth day, and on the seventeenth day after the injection the fistula was completely closed, when the animal was allowed to feed as usual, and resumed work, at which it continued without signs of relapse.

HORSE-SHOEING IN RUSSIA.

Veterinary-Captain Matthews, of the Royal Horse Guards, in a report on the various systems of Russian horse-shoeing, which has been published by the War Office, does not give us an exalted notion of the shoer's craft as it is practised in the Muscovite empire, and shows that we have nothing to learn in that quarter of the globe. From the descriptions, the shoeing must be abominably bad, for the reporter says: "Never in the course of my experience, either in England, India, Egypt, France or America, have I seen so many diseased and deformed feet amongst horses as I saw in the streets of Kiev; this is true to an extent of Moscow, and, in a lesser degree, of St. Petersburg." The army horses are better shod, but the shoes are all hand-made, and the winter shoeing is what might now be designated "old-fashioned." Machine-made shoes and nails are not yet in use; though we are informed that the Russian government is considering the desirability of building a factory wherein to provide shoes for war, "when their experts are agreed it would often be impossible to make them on the spot." Russia, it would appear, is as antiquated in its ideas as some of our military authorities at home, with regard to the shoeing of army horses in peace and in war.

THE BRITISH INSTITUTE OF PREVENTIVE MEDICINE.

It is proposed to found in this country an establishment similar to the Pasteur Institute in Paris, and others in nearly every country on the Continent. Appeals have been made for assistance to the wealthy, to corporations—lay and scientific—and especially to medical bodies, societies, and practitioners. Sir Joseph Lister, Bart., F.R.S., is the Chairman of Council, Sir Henry Roscoe, M.P., F.R.S., is Hon. Treasurer, and Dr. Ruffer, M.A., 19, Iddesleigh Mansions, Westminster, London, is Hon. Secretary. The veterinary profession is represented on the Council by Dr. Fleming, C.B. The following appeal has been made to the veterinary profession :—

"The establishment of the British Institute of Preventive Medicine must greatly tend to the promotion of Veterinary Medicine and benefit the Veterinary Profession. At present there is no Institution in the United Kingdom specially devoted to preventive medicine, and Veterinary Surgeons have seriously suffered from this omission. Nearly all recent discoveries and investigations in Pathology have been made in similar institutions on the Continent. I might adduce, as an example, the discovery of Mallein by Helman in the Imperial Institute of Experimental Medicine of St. Petersburg. The Institute Pasteur has also been of great service; and even now, when a Veterinary Surgeon in this country is desirous of employing Mallein, or the different vaccines used to inoculate animals in order to protect them from such diseases as Anthrax, Black-Quarter, and Swine-Plague; or in order to ascertain whether they are affected with disorders such as Glanders and Tuberculosis, he must apply to one of the Continental establishments for a supply of the material. Such a state of affairs is very discreditable to the United Kingdom, which should really be in advance of every other country in this respect, and I feel confident that the Veterinary Profession will do all in its power to remove such a slur from the reputation of Medicine in our land.

"George Fleming, F.R.C.V.S."

ENTOMOLOGY AS A SANITARY SCIENCE.

At the Sanitary Congress held at Portsmouth last September, a thoughtful and suggestive paper with the above title was read by Mr. T. B. Goodall, F.R.C.V.S., which attracted considerable attention. In his philosophical disquisition, Mr. Goodall insisted upon maintaining the balance of nature, and showed the great value of some insects in effecting this—giving as illustrations the Drone fly *(Eristalis tenax)*, which feeds on putrefying animal or vegetable matters, and is therefore one of the best scavengers; the common gnat *(Calex pipiens)*, which lives on the microbes infesting the situations it infests; another gnat *(Chironomus plumosus)* as useful; the ordinary blow-fly *(Calliphora vomitaria)*, and many other flies of an allied kind. In his opinion, all fæcal and organic matters in rural districts should be removed as far as practicable from dwelling houses and wells, and spread over the land. "If offensive they should be covered with a light coating of earth, and then Nature's myriads of workers would be enabled to perform their allotted tasks, and we should be saved the sufferings of many evils and much expense. I was at a gentleman's mansion a few days ago, where the sewage was run into open ditches. I was taking notes for this paper. The ditches were low; ducks and fowls were feeding on the very larvæ I have been describing, the *Eristalis tenax*. Here the cycle of life was being completed. Putrefactive organisms disintegrating the sewage matters, the larvæ of the Diptera had been thriving and growing on them. The ducks and fowls were growing fat on these larvæ, and would in their turn be consumed by man."

As we have said, the paper (which is published in the Transactions of the Sanitary Institute, Vol. XIII.) is eminently suggestive, and Mr. Goodall is to be congratulated on having indicated a new path by which sanitarians may seek for further light and aid in their crusade against the pestilences that walk in darkness.

THE MAYOR OF MAIDENHEAD.

THE Mayor of Maidenhead, J. F. Simpson, F.R.C.V.S., J.P., entertained the Council of the Royal College of Veterinary Surgeons at dinner in the Holborn Restaurant on October 5th, and invited a number of gentlemen to meet. Among the latter who partook of the worthy Mayor's hospitality, were Professors Axe and Pritchard, Dr. Fleming, C.B., E. Clarke, Secretary of the Royal Agricultural Society, A. W. Hill, Secretary, and G. Thatcher, Solicitor to the Royal College of Veterinary Surgeons.

IMPROVED SIDE LINE.

BY A. E. MICHELL, M.R.C.V.S., ST. AUSTELL.

THE side line represented by the accompanying woodcut needs only to be seen to be appreciated. It is at once simple, yet complete, easy of adaptation to either a large or small animal, yet perfect in action, in that its functional position for operations remains constant.

Its superiority over anything of the kind before the profession lies in its uniformity of action. It affords complete and safe control of the animal, thereby preventing the possibility of injury by twisting or straining the back, which is so liable in casting by an ordinary side or uneven action apparatus.

The collar is so made as to closely fit the neck and shoulders; any variation of size that may be necessary is effected by letting out or taking up one or more holes on each side of the neck-strap *A*. The ropes, which are of suitable size and strength, are each 28 feet long, and are fastened to the collar *B*; they are passed between the forelegs, through the hobbles attached to the hind-legs, or without hobbles; then back through the steel runners *C* and *D*, on the sides of the collar, which keeps the latter in position. The ropes are gently pulled, and so the horse is cast in the most safe and easy manner possible, without risk to either man or beast. It is made by Messrs. Arnold and Sons, West Smithfield, London.

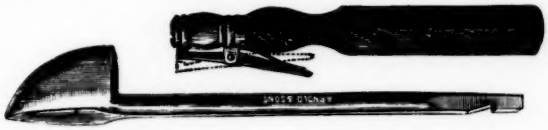
A NEW FIRING IRON.

BY G. UPTON, JUNR., HAMPSTEAD, LONDON.

THE firing iron made for me by Messrs. Arnold is, I consider, a great improvement upon the older pattern. The iron is held in its position by means of a spring which fits into a groove in the iron, which spring holds the iron perfectly tight. The iron can easily be released by raising the catch and

tapping the bottom of the handle; while it can be easily readjusted by raising the catch and pressing the handle into the iron.

These kind of handles have advantages, inasmuch as they can be applied to any kind of iron-docking, castrating, &c.; they do not get burned in the fire; they cannot become loose like the old-fashioned screw irons; they cannot get hot and burn the hands when operating; they can be packed into less space when riding, and are not so heavy.



They are not expensive, and can be applied to any socket-form iron now in use.

In bringing these handles before the profession, I do not claim for them any originality on my own part, but I trust they may prove of some service to the members of the profession, and that the small extra expense will be well repaid by their practical usefulness.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

THE ROYAL VETERINARY COLLEGE.

THE introductory address for the ensuing session of the Royal Veterinary College was delivered on October 5th, by Professor McFadyean, B.Sc., F.R.S.E. A large company assembled in the lecture theatre of the institution to listen to the address, including Veterinary-Colonel Lambert, C.B., who presided; Mr. Mulvey, President of the Royal College of Veterinary Surgeons; General Sir F. Fitz-Wygram, M.P.; Sir Henry Simpson; Veterinary-Lieut.-Colonel Duck; Mr. Clarke, Secretary of the Royal Agricultural Society; Dr. Fleming, C.B.; Professor Brown, Professor Simonds, Mr. Simpson, J.P., &c.

Professor MCFADYEAN chose as the subject of his address "The Growth of Veterinary Pathology during the last Twenty Years." He said he intended, mainly by considering a few well-known diseases as examples, to show how radically their notions had changed, and how rapidly knowledge had grown regarding these matters within the time specified. There was no exaggeration in saying that within the last twenty years veterinary science had made greater strides than it did during the preceding eighty. In no branch had the progress been so rapid as in the domain of pathology. Pathological research had discovered new diseases, had revolutionised the views formerly held regarding many others, and was now pointing the way to methods of cure and prevention that were scarcely dreamt of two decades ago. He instanced tuberculosis, which twenty years ago was generally ascribed to some mysterious quality of the tissues peculiar to certain breeds and individuals. At the present day they had no need to speculate regarding the cause of tuberculosis. It had been proved beyond the possibility of a doubt that tuberculosis was caused

by the introduction into the system of a minute vegetable parasite or germ, and the disease had now to be classed with the contagious maladies. They knew further that the disease was identical with consumption in the human subject, and they had to recognise the possibility of the disease being transmitted from the one species to the other. Anthrax afforded another example of the revolution that was effected in their notions regarding the cause of most diseases. Twenty years ago it was believed that it originated spontaneously, and that geographical, climatic, and dietetic conditions played an important *rôle* in its production. Anthrax was now known to be a disease caused by the entrance into the body of a vegetable organism—the anthrax bacillus. Glanders, also, was now shown to be caused by the injection of a germ derived from some antecedent case of the disease. But perhaps the disease regarding whose nature and cause the most complete change of opinion had been effected within the past few years was tetanus, or lockjaw. In books published twenty years ago there was not the barest suggestion that the disease might be due to a germ, and yet they knew to-day that the locking of the jaw, from which the disease derived its popular name, was due to the action of a deadly poison manufactured in the wound by a bacillus. Strangles was another disease in regard to which they had changed their ideas. As an illustration of the new diseases which pathological research had discovered, he cited that of actinomycosis, which was formerly confounded with other affections, such as cancer and tuberculosis. They now defined the disease as one caused by a vegetable parasite—the ray fungus. These illustrations served to give some idea of the rate at which knowledge had extended regarding the nature and cause of diseases. It might be asked whether there had been like progress regarding the means of curing and preventing these diseases. It was a truism that the discovery of the cause of a disease was the first step towards the discovery of the means of cure or prevention; but it had perhaps to be confessed that the discovery of remedies often lay a long way behind the discovery of the causes. Still, magnificient results had already been achieved in the case of some diseases. Take, for instance, the Pasteurian method of protecting animals against anthrax by means of alternated cultures of the anthrax bacillus, a method which during the last ten years had annually saved many thousands of pounds to the stock-owners in France. It had recently been shown that it was possible to protect even horses against lockjaw by the use of what was termed a chemical vaccine, and the blood serum of horses thus protected had been found capable of conferring immunity when injected into other animals. What was still more remarkable, and pregnant with promise of the most beneficial results to both man and the lower animals, was that it had been discovered that the blood serum of horses thus artificially rendered immune against lockjaw was actually curative when injected into animals already affected with tetanus. As an example of further progress, he pointed to Koch's discovery in regard to tuberculosis, which gave them clear notions regarding the manner in which the disease was spread, and had pointed the way to confine its ravages—possibly even to stamp it out of existence. As to the place which the subject of pathology should occupy in the education of the veterinary student, he said it had been difficult to teach pathology in that institution as it ought to be taught, because the short curriculum did not admit of full justice being done to the subject without curtailing the time that ought to be devoted to the study of other branches. Every teacher must therefore hail with satisfacton the near approach of a four years curriculum. The veterinarian who wised to deserve the name of practical could not afford to be ignorant regarding pathology and bacteriology. At the present day a veterinary surgeon might easily bring discredit on himself, and even endanger life through errors in diagnosis from which a resonable training in bacteriology would keep him free. Pathology and bacteriology

ought to be taught both theoretically and practically just as fully as chemistry, and that would first be possible when the four-years scheme of study came into operation. In conclusion, he referred to an event which he said was likely to exercise an important influence on the teaching and study of veterinary pathology in this country; he alluded to the founding of a chair of comparitive pathology in that institution, by the Royal Agricultural Society of England. The study of veterinary pathology was deserving of every encouragement, because it armed for the struggle with the diseases of domesticated animals, but there was an additional incentive in the reflection that a more accurate knowledge regarding animal diseases was sure to shed a fuller light on the nature of certain affections of man himself. All honour was, therefore, due to the Royal Agricultural Society for its foresight in encouraging the study of this important branch of medical science, and for doing what in nearly every civilised country had been accepted as the duty of the State.

The CHAIRMAN, in proposing a vote of thanks to Professor McFadyean, said the Governors of the institution desired to make it second to none as a teaching school. As a proof of that, that portion of the building in which they were assembled had been constructed at a cost of £10,000. He pointed out that it had been decided to extend the course to four instead of three years.

Professor BROWN seconded the vote of thanks, which was carried.

It was announced that the following among other prizes had been awarded:—Coleman prizes: Silver medal, Mr. H. W. Dollar; bronze medal, Mr. C. J. Reakes; certificate of merit, Mr. G. W. Lamb. Scholarships; £25 per annum for two years, Mr. W. H. Prince; £21 for one year (the "Centenary"), Mr. H. M. L. Conyngham.

On the motion of General FITZWYGRAM, a vote of thanks was accorded to the Chairman.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL HELD OCTOBER 5TH.

Mr. W. J. MULVEY, President, in the chair.

Present:—General Sir Frederick Fitzwygram; Veterinary-Colonel Lambert, Veterinary-Lieutenant-Colonel Oliphant, Professor Penberthy, Veterinary-Captain Raymond; Messrs. Barford, Beddard, Burnett, Fraser, Hartley, Hedley, Mason, Merrick, J. F. Simpson, Trigger, Wragg; Mr. G. Thatcher (Solicitor), and Mr. A. W. Hill (Secretary).

The SECRETARY read the notice convening the meeting.

On the motion of Mr. MASON, seconded by Mr. BEDDARD, the minutes of the last quarterly meeting, and of the special meeting, were taken as read and confirmed.

Absentees.

The SECRETARY stated that he had received letters from the following gentlemen regretting their inability to attend the meeting:—Professors McCall and Walley; Messrs. Kidd, Taylor, Whittle, Wheatley, Nisbet, Donald, Hunting, and Edgar.

Correspondence.

The SECRETARY read a letter from Mr. Whittle tendering his resignation as a member of the Council.

On the motion of Mr. TRIGGER, seconded by Mr. WRAGG, it was resolved that the Council, in accepting Mr. Whittle's resignation, should express its thanks for the services he had rendered to the profession, and its regret that he should be compelled to resign.

The SECRETARY read a letter from Mr. Donald, stating that at the next quarterly meeting of Council he intended to move—"That this Council prepare and issue a Veterinary Pharmacopœia."

The SECRETARY read a letter from Mr. Priest, and was directed to reply that the Council could not grant the request applied for in regard to registration under the Act of 1881.

The SECRETARY read the following letter from Veterinary-Colonel Lambert:

"I beg to inform you that at the next meeting of the Council it is my intention to ask the following question:—What educational certificates were presented to the Secretary by the students who wrote the certificates of the examination for soundness as recently published in the veterinary journals?"

The PRESIDENT said that when he received Colonel Lambert's letter he instructed the Secretary to make the necessary inquiries, and two communications had been received from Mr. Rutherford to the effeet that he had no record of the certificates presented, but that he certified they were up to the required standard. With regard to London, it had not been the custom for the Secretary to receive any of the educational certificates.

Veterinary-Colonel LAMBERT said there were seven proposals he should like to make with reference to the examination.—(1) That the Council conduct the Matriculation Examination in accordance with the bye-laws. (2) That the Examination be uniform throughout the United Kingdom. (3) That the Treasurer of the Council receive all fees and defray all expenses for the Matriculation as he does for the professional examination. (4) That the Council of the Royal College of Veterinary Surgeons make suitable arrangements for the place and time of the Examination in consultation with the schools. (5) The papers, answers, and marks to be preserved by the Council, and to be open to the inspection of its members; when a student obtains his diploma or otherwise retires from study the papers to be handed over to him. (6) Certificates produced by candidates to be registered and preserved, and to be returned at the termination of their studies. (7) To meet expenses a fee of two guineas to be paid for matriculation instead of as heretofore.

The PRESIDENT said that the bye-laws regulating the examination stated that students who did not produce one or other of the certificates referred to should be examined by a board of examiners appointed by and under the direction and supervision of this College. He was sorry to say that that had not been carried out, because he believed the Matriculation examination had been conducted at the various schools by a body appointed by the Council, and without any direct supervision or order from the Council.

Mr. THATCHER asked whether it was worth while to make any alteration, as it could only last eleven months, because "on and after the 7th September, 1893, students who enter the veterinary schools shall, prior to their first professional examination produce a certificate that they have passed the preliminary General Educational Examination, in force after the 20th January, 1892, of the General Medical Council."

Veterinary-Captain RAYMOND said at the present moment the Council was making itself ridiculous in the face of the world. They had bye-laws stating the Council directed and supervised the examination. As a matter of fact he questioned whether the Council even selected the examiners. Not one member of the Council had ever seen the examination papers or the certificates, yet were supposed to supervise and direct the examination. The Council had been utterly wrong, and the sooner it could put itself in order the better. It could be done without altering the present bye-laws by simply reverting to the old bye-laws.

Mr. J. F. SIMPSON thought the matter all depended upon the interpretation put upon the word "supervision." The Council selected an educational body

to act for it, and he maintained it was not a part of their business to overlook the duties of that body.

Mr. HEDLEY said that having regard to the importance of the subject, and to the fact that there was a bye-law which they did not carry out, he would give the following notice of motion for consideration at the next meeting:—"(1) That one or more members of the Council be delegated in rotation to attend each Matriculation and professional Examination; (2) that the Secretary be instructed to keep the rotation list for this purpose; (3) that the necessary expense of the delegate or delegates be defrayed from the funds."

Veterinary-Colonel LAMBERT proposed that at the next Matriculation Examination the bye-laws regulating the examination be carried out as directed.

Mr. FRASER seconded the motion. Hitherto the certificates had not been submitted to the Council or to the Secretary. He thought that in future the certificates should be submitted to the Council.

The PRESIDENT said that the certificates were produced to the various schools. They were not sent to the Secretary of the Royal College of Veterinary Surgeons or to the Secretary of the Board of Examiners in Scotland. The Secretary had told him that he had never received any educational certificates.

Mr. TRIGGER moved—"That the Examination Sub-committee be instructed to see that the bye-law relating to the preliminary examination be carried out; that the certificates admitting students to any of the veterinary colleges without educational examination be lodged with the Secretary of the Royal College of Veterinary Surgeons, as shall also all papers, answers, and marks of the students who submit themselves for examination."

Mr. J. F. SIMPSON seconded the motion, which was carried.

Veterinary-Captain RAYMOND gave the following notice of motion:—"That in future students shall be registered at the Royal College of Veterinary Surgeons, and that there be a registration fee of one guinea."

Presentations.

The SECRETARY announced the following presentations:—"The Annual Statistical General Report of the Army Veterinary Department," for the year ending March 31st, 1892, by Veterinary-Colonel Lambert; copy of vol. iv. of the *Veterinary Record*, by the Editor, Mr. W. Hunting; "Illustrations regarding Meat," from Colonel Reeves, C.B.

On the motion of Mr. WRAGG, seconded by Mr. MASON, a vote of thanks was accorded to the donors.

Finance Committee.

The SECRETARY read the report, which recommended that in future the Quarterly Report of the Treasurer be printed and circulated to the Finance Committee.

Mr. WRAGG moved—"That the report be received and adopted, and that the Treasurer be empowered to draw cheques to meet the liabilities."

Veterinary-Colonel LAMBERT seconded the motion, which was agreed to.

The New Charter.

Mr. J. F. SIMPSON said that he had noticed in the journals that the Charter prayed for had been granted; he thought the time had arrived when the Council should have notice of it.

The PRESIDENT said that the Charter had been forwarded to the College, but had been returned for amendment, owing to some errors on the part of the clerks at the Privy Council Office.

Registration Committee.

The SECRETARY read the report, which stated the number of prosecutions in the Solicitor's hands, and gave the list of convictions. A member of the College had attended before the Committee and explained the position he occupied with regard to covering an unqualified person, and the Committee recommended that no further steps should be taken. Further prosecutions were ordered, and the Committee directed that first and second cautionary notices be issued in the different cases brought before them. The report further stated that the Secretary had called upon Messrs. Kelly with regard to veterinary surgeons being entered in the Directory under the heading of "Trades," and that he was instructed to see Messrs. Kelly again on the subject. Two members were restored to the Register, having given satisfactory evidence of their omission to comply with section 4 of the Act.

Mr. TRIGGER moved—".That the report be received and adopted, and that the seal of the College be affixed to the prosecutions."

Mr. WRAGG seconded the motion, which was agreed to.

The Examination Committee.

The SECRETARY read the report, which stated that a sub-committee—consisting of the President, Veterinary-Captain Raymond, Mr. Hunting, and Mr. Simpson—had been appointed to draw up the rules of the written examination, and to consider a report on other subjects which the Examination Committee might have referred to them.

On the motion of Mr. MASON, seconded by Mr. HEDLEY, the report was adopted.

Library and Museum Committee.

The SECRETARY read the report, which recommended that a catalogue relating to the Library be printed, and that no book be removed.

On the motion of Mr. WRAGG, seconded by Mr. SIMPSON, the report was adopted.

The Fellowship Examination.

The SECRETARY read the report, which stated that an examination for the Fellowship degree was held in London on Friday, July 29th, when the following gentlemen were admitted Fellows of the Royal College of Veterinary Surgeons:—J. Blakeway, J. Crowhurst, J. J. Crowhurst, E. J. Crowhurst, W. H. Crowhurst, and F. H. Gibbings. The examiners were Dr. Fleming, Professor Duguid, and Mr. J. Roalfe Cox.

Fitzwygram Prize Competition.

The SECRETARY stated that there were nine candidates who competed for the prizes. The Theoretical Examination was held in London and Edinburgh on the 8th June. The practical and *vivâ voce* was held at the Royal Horse Infirmary, Woolwich, on the 22nd June, with the following results:—1st, T. G. Heatley; 2nd, W. F. Maynard; 3rd, F. L. Clunes.

Date of the Next Examination.

On the motion of Mr. TRIGGER, seconded by Mr. MASON, it was resolved that the next examination should commence in London on the 12th December.

The following motion by Sir Frederick FITZWYGRAM for the alteration of Bye-law No. 9—"That the President be requested to arrange the agenda (after the minutes have been read and signed), and in such order as may enable the more important business to be transacted earlier than is at present the case,"—not having been suspended for the necessary time, was not taken into consideration by the Council.

Motion by Veterinary-Captain Raymond.

Veterinary-Captain RAYMOND moved—"That the offer of the subscribers of the Steel Memorial Fund be accepted upon the conditions submitted by the Hon. Secretary." At a general meeting of the Steel Memorial the following resolution had been passed:—(1.) That the memorial take the form of a reward for scientific or literary work of merit connected with the profession, and that it be limited to members of the Royal College of Veterinary Surgeons. (2.) That the reward be in the form of a medal, to be designated the "John Henry Steel Medal;" that the medal be of gold, and of appropriate form and device. (3.) That the Council of the Royal College of Veterinary Surgeons be asked to accept the amount subscribed conditionally upon their agreeing to form a Steel Memorial. (4.) That in the event of the Council accepting the amount and agreeing to the conditions, the Treasurers be empowered to hand the money to the Council. (5.) That in the event of the fund left in the hands of Mr. Banham by the late National Veterinary Congress being forthcoming, it be added to the "John Henry Steel Memorial Fund." It was for the Council to decide whether it saw its way to accept the offer and manage the money.

Mr. FRAZER seconded the motion, which was agreed to.

Veterinary-Colonel LAMBERT moved—"That a cordial vote of thanks be accorded to the subscribers of the Steel Memorial, to the President, Secretary, and Treasurer of the Committee, and to the surviving members of the National Veterinary Congress represented by Mr. Banham."

Mr. BURNETT seconded the motion, which was agreed to.

On the motion of Mr. MASON, it was resolved that the funds be invested in Consols.

Notice of Motion by Mr. Hunting.

The following notice of motion stood in Mr. Hunting's name:—"That Regulation 14 in the 'Regulations for the Professional Examinations' be suspended during the Christmas examinations, so as to permit Mr. Evander Browne to present himself for the second examination."

The PRESIDENT said that Mr. Hunting was not present, and unless anyone brought up the motion, it must fall to the ground. Had Mr. Hunting been present, it was his (the President's) intention to say that the resolution could not be carried out without altering the bye-law, the notice of which would have to be suspended for three months. Mr. Evander Browne had qualified at the Bombay Veterinary College, and had the diploma of that college, and he wanted to go up for his second examination at Christmas, and, if he passed, to be eligible to go up for the third examination in May. That would necessitate an alteration of the bye-law.

Veterinary-Colonel LAMBERT asked if the Bombay college was recognised.

The PRESIDENT said it was not.

The SECRETARY read the following letter from Mr. Evander Browne:

"To the President and Council of the Royal College of Veterinary Surgeons, London.

"Gentlemen,—It was my privilege to be a personal friend of the late Professor Steel, of Bombay, and at his request I enrolled myself as a student at the Bombay Veterinary College, with a view to qualify myself for the A. V. D. Professor Steel assured me that the Bombay Veterinary College would be recognised by the Royal College of Veterinary Surgeons. Unfortunately his hopes were frustrated, and in consequence I have had to come to England to qualify myself through the Royal Veterinary College. I find, however, that under the present rules I shall be just over age at the completion of my studies here. I shall be 25 next March. From the foregoing statement it will be seen that my case is an exceptionally hard one, and the career which I had mapped

out for myself will be lost to me through no fault of my own, unless I am allowed to present myself for the examination in Class B in December next. If you will kindly permit me I would suggest that this can be done either by granting me special permission or by suspending Regulation No. 14 of 'Regulations for the Professional Examinations.' For your information I may state that I passed a superior examination for my diploma in India, securing first place in the first class, besides taking various prizes and scholarships. Further, at the recent examination in Class A under the Royal College of Veterinary Surgeons I passed with 'great credit.'

"I am, sirs, your obedient servant,
"H. EVANDER BROWNE."

On the motion of Mr. MASON, seconded by Mr. WRAGG, it was proposed that a reply be sent pointing out that it was impossible to accede to Mr. Evander Browne's request, as it would necessitate the alteration of the bye-law, which would require three months' notice.

The PRESIDENT said there were one or two things he should like to mention to the Council. Last month he had thought it his duty as President of the College to call a meeting of the profession residing in London and the suburbs, with a view of passing certain resolutions with regard to glanders. That meeting was held, and certain resolutions were adopted and sent in to the Board of Agriculture and the London County Council. Those resolutions have been acknowledged, and he believed that they had been productive of good results. He hoped his action in the matter would meet with the approval of the Council. Another thing he wished to mention was that the Secretary had spoken to him with reference to the increase of his duties—the work having been very much increased for some time past. He would suggest that the Council appoint a small sub-committee to inquire into the matter, and to report to the next meeting of Council. The Secretary had also asked that a permanent clerk be appointed to assist him.

On the motion of Mr. TRIGGER, seconded by Mr. HEDLEY, a small sub-committee, consisting of the President, Veterinary-Captain Raymond, Mr. J. F. Simpson, and Mr. Wragg, was appointed to consider the subject and report to the Council.

Obituary.

The SECRETARY read the obituary list.

The PRESIDENT said that, with regard to the future examinations, he thought it would be advisable for the Council to advertise in the veterinary journals for gentlemen to act as examiners. Applications had to be sent in to the Council fourteen days previous to the election, with names and qualifications.

Mr. SIMPSON moved: "That advertisements be inserted in the veterinary journals, and that the candidates be nominated fourteen days before the meeting, in accordance with the bye-laws."

Mr. MASON seconded the motion, which was agreed to.

On the motion of Mr. WRAGG, seconded by Professor PENBERTHY, a vote of thanks was accorded to the President, and the meeting terminated.

GLASGOW VETERINARY COLLEGE.

THE Glasgow Veterinary College began its course of instruction on October 5th. The class-room was crowded by medical officers of health, veterinary surgeons and students, as well as by a number of agriculturists. Dr. Stevens, of the Glasgow Royal Infirmary, occupied the chair.

The introductory address was delivered by the Principal of the College, Professor McCall, F.R.C.V.S., and was as follows:—

"IS SCARLATINA A BOVINE MALADY?"

The subject I have selected to discuss on this occasion is the grave malady in mankind known by the name of "Scarlet Fever."

It is unusual for veterinary surgeons to choose a human disease as the theme of their remarks upon such occasions as the present, because it is a field of research in which they cannot be said to be at home.

Speaking for myself, I can assure you I have no desire to constitute myself an authority upon any of the many diseases which affect the human body, and my sole reason for taking up the subject is that it has been publicly proclaimed in various papers, professional and non-professional, that the scarlet fever of man originates in the cow, and by the milk secretion of the affected animal is conveyed to man. In proof so far of this, I shall now read to you a copy of a paragraph which appeared in *The Bailie* of date 17th August last:—"The rather sharp epidemic of scarlet fever on the south side has been nipped in the bud, thanks to our system of the notification of disease. On the first day 103 cases were reported at the Sanitary Office, on the second 105, on the third 100, and on the fourth 15. The worst cases were removed to Belvidere, and not only was the city dairy *found*, but the farm and cows in Renfrewshire which caused the trouble. The cows were examined by Drs. Russell and Munro, and found *to be suffering from scarlatina*. With regard to human diseases, and their close relation to that of animals, there is more in it than is yet dreamt of in medical philosophy." And by way of keeping up the attention of the public, a reference is again made to it in the next weekly issue in the following terms:—"The Health Committee of the Town Council have decided to ask the assistance of the experts of the Local Government Board to make experiments with the matter got from the pastular eruption on the teats of the cows *said to have caused* the recent outbreak of scarlet fever on the south side."

Such are the statements made, and I have anxiously scanned the pages of *The Bailie* for the report of the experts of the Local Government Board; but as yet all is silent, and as no one has contradicted the statement "*that the cows were suffering from scarlatina*," I consider it to be a duty incumbent on me to calmly review the circumstances and conditions which have seemingly warranted such a serious charge being brought against the poor cows.

It has been, as you see, alleged that the human malady scarlatina can originate in the cow, and by ingestion of the milk of the affected animal, the bovine scarlatina can, in its turn, become the human scarlatina.

Need I say that such an allegation, in the face of the daily large consumption of the milk of the cow by the human subject, is one of grave importance.

In the 22nd annual report on the operations of the Sanitary Department of the City of Glasgow for the year 1891, I observe that 3,115 individuals were attacked by this disease, and from another source I am informed that from 17,000 to 18,000 individuals die in England annually from scarlatina.

If, then, the malady originates in the cow, and is imported into the body of mankind by partaking of the milk as an article of diet, the question I think may fairly be asked, Is it wise and an actual necessity for the human subject to run such a risk? Would it not be in the interests of the human family to discard the use of milk?

We are told that, by using the milk of tuberculous cows, the hitherto healthy human subject may become the victim of consumption, and such an inference, in my opinion, founded on experiments, is justifiable; but, notwithstanding all this, I am not aware that any medical authority has alleged that tuberculosis originates in the cow, and descends from her to the human family.

We are also too familiar with the fact that typhoid fever has been produced in the human subject by the ingestion of milk; but no medical authority has proclaimed that typhoid fever originates in the cow, although, strange to say, it was the tracing and connecting of an outbreak of enteric fever in Islington by Dr. Ballard in 1870, with the milk supplied to the affected persons, which first connected the cow with human maladies, and has since laid her open to grave suspicion.

In 1878, there was a serious outbreak of diphtheria in Kilburn and St. John's Wood, and as it was alleged that "it was *possible to assert* that none of the agencies by which milk, after being taken from the cow, may become infective, could with any shadow of probability have been in operation," the fiat went forth that the disease diphtheria originated in the cow, and is transmissible in the milk of the affected cow to the human subject.

The allegation having now passed into an established fact, the cow having become the accredited originator of human diphtheria, what may not her possibilities be?

And, accordingly, we find in 1885 she has added another laurel to her crown, and been declared the originator of the disease, human scarlatina.

Now, gentlemen, let us see on what grounds this grave charge has been, for the first time, made against the cow. It is impossible for me in the brief space of time at my disposal to go into all the details, but I will with an unbiassed pen give you an honest synopsis.

The Hendon Case.

"On 18th December, 1885, Dr. Blyth reported a sudden and extensive outbreak of scarlatina that appeared to be associated with the distribution of milk from a particular retailer in South Marylebone who received his milk from a dairy farm at Hendon." The Local Government Board employed a Mr. Power to investigate and report, and from his published report we take the following statement:—"That at the time of the outbreak all the persons and families connected with the milking and feeding of the cows, and all their neighbours in Hendon, were free of scarlatina, so that it could be affirmed of the milk that, if indeed it had caused scarlatina among its consumers, it had not acquired the ability to do so in any commonly accepted way, such as through unwholesome conditions of water, or drainage, or through careless handling of milk or milk utensils by persons carrying scarlatina infection." Such being the case, it was *inferred* "that the cows themselves must have had something or other to do with any scarlatina which had been distributed with their milk."

On examination of the cows, it was found that several had eruptions on their teats, and "that on 15th November, three newly-calved cows purchased from Derbyshire had been received into the business." Before 15th November no new cows had been received since the middle of October, and it was shortly after the arrival of the Derbyshire cows that scarlatina manifested itself in Marylebone.

Particulars connected with the distribution of the milk and outbreaks of scarlatina are then given in detail, and, "in short, what had been seen to be a succession of probabilities if the scarlatina in London districts were indeed the outcome of the milk distributed from the Hendon Farm, was now established as a *succession of facts*. Mr. Power goes on to say, "We had thus reached the point of excluding *external* scarlatina, of associating the importation of particular cows into the Hendon Farm with the presence of scarlatina in London districts, and of connecting by a series of parallel events the milk furnished by those cows and by related cows with the peculiarities of scarlatina prevalence among consumers of the Hendon farmers' milk. Under these circumstances, it was *not judged* necessary to go beyond the Hendon Farm,

and to inquire at the two other farms that also sent milk into the London districts of South Marylebone, Hampstead, and St. Pancras in search of the cause of scarlatina in those districts. Henceforward, until anything to the contrary should appear, an influence competent to produce scarlatina among the consumers of the milk was *held* to have operated from those cows which were received into the Hendon Farm on 15th November, and the further concern of the inquiry was with the nature of such influence."

So much for Mr. Power's finding, which, as you will observe, is *mainly inferential*, and in order to show you that it is open to question, and not by any means to be accepted as proven, I shall now refer to the report by Professor Axe, of the London Veterinary College, dealing with the same subject, which report is referred to in Professor Brown's report to the Lords of Her Majesty's Most Honourable Privy Council.

Professor Axe's Views.

Regarding the three cows purchased on 15th November, Professor Axe says: "The three cows purchased by Mr. Panter, Hendon, and from which the scarlatina epidemic is stated to have arisen, were part of a lot of thirty cows bought in Derby, on the 16th and 30th October respectively, by Mr. Richard Keevil, a dealer. From the date of their arrival in Middlesex, they were on offer for sale, and each day, or every other day, one, two, or more were sold to customers as they presented themselves. At this time several of the new cow stock were suffering from sore teats, and others contracted the disease before being disposed of.

"So long as they remained in Keevil's hands they, with the unaffected cows, were regularly milked morning and eve, and the produce of the whole was disposed of in the usual way.

"From the first day to the last, while the milk of these cows was being drunk, no case of scarlatina was heard of among the customers of the dairy.

"Of the thirty cows referred to, eight were sold to Mr. J. Keevil, a dairyman at Merton; three were sold to Mr. Crees, of Hendon; and three to Mr. Panter, the unfortunate Hendon farmer. The remainder were disposed of in ones and twos to various metropolitan and provincial dairymen.

"On arriving at J. Keevil's, three or four of the eight cows were noticed to have sore teats, but in other respects they appeared in perfect health; in a few days, however, the teats of the other cows in the herd became affected, and from *thirty* to *forty* in all would suffer. While the disease was prevailing among the cows, *two* of the milkers drew attention to an eruption on their hands, which, as far as the dairymen could judge, was identical with that on the teats of the cows.

"Both cases were afterwards seen by Doctor Bates, who informs me that the men were suffering from a well developed attack of "Vaccinia," (cow pox) contracted by them in milking.

"To the two cases above referred to, a third may be added. It occurred in the person of a man engaged in milking who had a small pimple on his face. Being irritable, he was induced to scratch the part with his hand tainted with the discharges from the diseased teats, with a result that a similar eruption shortly afterwards appeared on the inoculated spot.

"These three cases assume the form of accidental experiments, and seem to exonerate the cow disease from any relation with, or participation in, the London scarlatina outbreak.

"Notwithstanding the eruption on the teats, the milk was regularly distributed to 400 households, and although upwards of 1,000 persons of all ages drank the milk day by day, no complaint was lodged against it.

"During the prevalence of the disease in his stock, Mr. Keevil, having heard of the outbreak of scarlatina, and its *supposed origin* in Mr. Panter's cows at

Hendon, visited the suspected herd, and carefully examined them. Finding the disorder of the Hendon cows to be identical with that of his own, he naturally became concerned as to the health of his customers, and on his returning home caused inquiry to be made in every direction, with the result that even the medical officer for health failed in detecting a single case of epidemic disease in the district.

"The disease thus transmitted by the now notorious Derby cows was not confined to the dairy of Mr. Keevil and Mr. Panter; for it appears in the month of January, when the malady appeared to have died out, and it was thought to have lost its contagious property, seven of the cows which had recently suffered from the eruption were disposed of to Mr. Vipon, near Merton, and added to his herd of dairy stock, and here again several of his herd became affected with an eruptive disease of the teats. Its spread, however, was to a limited extent owing to the bulk of the herd having passed through a prior attack.

"Mr. Vipon (who is a medical man) was fully conversant with the London epidemic of scarlatina and the suspicions attached to the Hendon cows; but, notwithstanding this, and a full conviction that the malady prevailing in his herd was the same as that in the Hendon and Merton dairies, he continued to dispose of the milk as usual, assured by former experience of the disorder that it was incapable of harm."

Regarding the three Derby cows sold to Mr. Crees, of Hendon:—"On their arrival from the dealer's it was remarked while being milked that one of them had an eruption on the teats, but no importance at the time was attached to it. In about a week a dozen of the old stock became affected, but their milk was disposed of as usual, and not a case of scarlatina was known to exist among the consumers.

"It will thus be seen that, at the time the Hendon cows were supposed to have imparted to the milk the power to induce scarlatina, those of Crees, infected from the same source,—viz. the Derby cows,—had for several weeks past been giving out milk free from any deleterious property.

"Finding it impossible to reconcile these facts with the assumption of a cow disease having relation with scarlatina, the inquiry has been carried on with the object of determining if the Hendon milk may not have acquired its infectious property in some other way; if, in fact, it could have been directly or indirectly contaminated from some human source of infection after its withdrawal from the cow."

Professor Axe now goes on to state that—"Scarlet fever existed in Hendon during several months of the year, particularly in the neighbourhood of Child's Hill, where the farm is situated; and it is important to remark that, at the time when the disease appeared in London, scarlatina was then present in the Mead. The Mead (a street) runs immediately alongside, and forms one of the boundary lines of the incriminated farm. The infected dwellings stand within 600 yards of the sheds in which the cows were housed and the dairy business carried on.

"In seeking for means by which the fever poison might have been conveyed from them to the farm, I found that of 14 men employed in and about the dairy six resided in the Mead, and passed backwards and forwards to the fever district daily. These were Bird, Goodman, Brown, Ludgate, senior, and his two sons; of the number, three or four were engaged in milking and disposal of the milk.

"As to the relations of the fever patients with the men, I could not make out that any direct intercourse between the households of the one and the other had taken place. On extending my inquiry, however, to the two cases of scarlatina which had occurred in the Mead during the month of November, I found that one of them was the daughter of a man named Potter, and the

other was a child living at Edinburgh Laundry. From the isolated position of Potter's house, and the assurance which I received that no intercourse had taken place between it and the men employed at the farm, or their families, the possibility of establishing a connection between it and Panter's dairy was remote; but, finally, I gathered from the father of the sick girl (Potter) that his son, a boy of twelve years, had for some time been on intimate terms with Panter's bailiff, and that he was in the habit of visiting the dairy whenever an opportunity offered. Much of his leisure time was spent in this way, and it was remarked by the father that they could not keep the boy away. Having heard of the cow disease and the consequences said to have arisen out of it, Potter himself likewise visited the dairy, and at a time, too, when the condition of infection still prevailed in his house, consequent upon his daughter's illness.

"Here, then, we have *a human source of scarlatina infection* in close proximity with the farm; and although it cannot be actually demonstrated that the milk became contaminated from it, *the possibility* of such an event may be reasonably accepted; at any rate, it is not a more remote assumption than that which *ascribed the outbreak to some hitherto unrecognised condition of the cow*."

We thus see that the evidence of Professor Axe is diametrically opposed to that of Mr. Power; and, to say the least, Professor Axe has the best of it.

Dr. Klein's Views.

We now come to the evidence given by Dr. Klein in support of Mr. Power's contention, "That scarlatina, or an influence competent to produce scarlatina among the consumers of the milk, was held to have operated from those cows which were received into the Hendon Farm on 15th November."

Dr. Klein, whose assistance was now invited, visited the farm on 31st December, and describes the general appearance of the udder and teats of the affected animals; and I wish to direct special atteution to the description which follows, as it is an exact description of the eruption on the teats of the cows at Jaapston, which, *The Bailie* states, were found to be suffering "from scarlatina, and which were said to have caused the recent outbreak of scarlet fever on the south side." The description is as follows:—

"The cows had on the teats and udder several flat irregular ulcers, varying in diameter from a fourth to three-fourths of an inch. Some ulcers were more or less circular; others extended in a longitudinal direction on the teat. The ulcers were covered with a brownish or reddish-brown scab, which, when scraped away, left exposed a granulating slightly indurated base. The margin of such ulcer was not raised, nor was there any perceptible redness of the skin around. In the earlier stages it was observed that a small vesicle made its appearance on a greatly swollen and red teat, and which, in the course of a couple of days, assumed the characters of the above ulcers. As a rule, the disease affects the teats, but in some the lower part of the udder also."

He also adds, but which were not seen on the Jaapston cattle:—"In such animals, patches denuded of hair were observed on various parts of the skin, the tail and back particularly. In these patches the epidermis was scaly, and the cutis more or less *thickened!* The animals looked thin, but not strikingly so. As regards the feeding capacity of the affected animals, also their milking power and their body temperature, nothing abnormal could be detected."

Dr. Klein then goes on to state that two affected cows were slaughtered, and gives the *post-mortem*. He also states that he successfully inoculated four calves with scrapings of the ulcers, and that "from these experiments there can be no doubt whatever that, by inoculating a particle of matter from the sores of an affected cow, a positive result has been obtained in all four calves." Having thus demonstrated this disease of the cow to be directly

communicable from animal to animal, he set to work to study its minute anatomy. The doctor then proceeds to give a minute description of the microscopic structure of the various lesions, and, in so far as the ulcers on the teats and udder are concerned, he says, "A section through the ulcer of the cow bears a great resemblance to a section through a cow or sheep pock." Dr. Klein now states, "That search was made for micro-organisms inhabiting the tissues of the ulcers, with a view of ascertaining what were present, and afterwards whether any single kind of those found had the power when dissociated from the diseased tissues, and inoculated into healthy animals, of transferring the disease."

Discovery of a Streptococcus.

The result was that he found a "streptococcus very similar to that of the streptococcus of foot-and-mouth disease, but with this difference, namely, that in gelatine tubes the streptococcus of foot-and-mouth disease is a little faster in its growth, and its component granules are a little more distant. But there is *one* test by which the two kinds of organism can be very readily distinguished. The streptococcus of foot-and-mouth disease, when grown in milk, does not affect the fluid character of the milk, whereas milk inoculated with the organism obtained from the cow's ulcer will, if kept for two days in the incubator at 35 degs. centigrade, have been turned completely solid."

To learn whether the milk while in the udder contained the streptococci experiments were undertaken, with the result that none were found.

Dr. Klein thus sums up:—"In view of the whole of this evidence, I consider it *conclusively* established that this streptococcus is identical with the virus of the cow disease, and that the inoculation of this streptococcus in calves produces a general disease in them, which, in many respects, bears a close resemblance to human scarlatina."

Dr. Crookshank.

As a set off to Dr. Klein's report, we now take up that of Dr. Crookshank's, Professor of Bacteriology, King's College, London, also referred to in Professor Brown's report to the Privy Council:—"Outbreaks of a disease of the teats of cows alleged to be identical with the cow disease at Hendon, were reported to Professor Brown. I had an opportunity of inspecting a few cases from these outbreaks. On an estate in Wiltshire, the disease was raging on some farms, and I had not only every opportunity for studying the disease on the lines indicated by Dr. Klein, but I was able, by repeated visits to the farms, to enter into the clinical history of the disease in the cows, to study very fully the nature of the disease on the hands of the milkers, and to trace the probable mode of introduction of the disease on the estate, and the way in which it spread from one part of the herd to another.

"There were altogether 160 cows on these farms. Only a few had proved refractory, and had not taken the disease at all. About 50 at a time were dry, and *they escaped until they were in milk again.*

"The milk was drunk on the farms and in the village, but most of it was sent twice a day to a large city. We may roughly estimate the number of persons drinking the milk at about 1,500, or 2,000. Most careful inquiries were instituted to ascertain the existence of scarlatina among consumers of the milk. So far the research was completely analogous to the Hendon investigation, and the contamination of the milk which I had myself witnessed, *led me to so fully believe in the probability of scarlet fever being found among the consumers of the milk* that I would not be satisfied until I had obtained the most reliable evidence that such was not the case. Under the circumstances, it was a matter of surprise that no cases of scarlatina were found on the farms or in the village, and that in the town district in which the milk was distributed there was no epidemic produced by its use.

"It is obvious that farmers, dairymen, medical men, and, indeed, experts in the diseases of cattle, would be liable to pronouce an outbreak of the Wiltshire disease to be the *alleged* bovine scarlatina."

"In studying this disease, therefore, we must place ourselves in the position of endeavouring to discover what condition may exist which will enable the skilled practitioner to distinguish an outbreak similar to the Wiltshire disease from an outbreak of bovine scarlatina. For it is certain that this Wiltshire disease could not possibly be regarded as another instance of bovine scarlatina, *as no scarlatina resulted from the use of the contaminated milk.* This naturally led me to reflect upon the immense importance of ascertaining some means of differential diagnosis. For if during the Wiltshire *outbreak, as a mere coincidence,* there had happened to be cases of scarlatina among the consumers of the milk, and this condition of the cow had been discovered by the inspector, the consequences would have been disastrous to the dairy farmer. But if we endeavour to find differences, we are led step by step to the conclusion that there is *no means* at our command *of distinguishing this disease from the description* which has been published of the *clinical characters* and the *pathology of the disease* which was observed *at Hendon.*"

Professor Crookshanks then proceeds to state that, "In both cases we meet with a disease which spreads throught a whole herd of milch cows. In both cases the disease is characterised by the appearance of vesicles, which are broken by the hand of the milkers and irritated into deep ulcerations. In both cases the disease is conveyed from one cow to another by the hand of the milker. In both cases the disease is mild, not a fatal one, and if a cow was killed for diagnostic purposes, no assistance would be gained, as in both cases the *post-mortem* appearances which may be found are not to be distinguished from accidental complications. In both cases the naked-eye appearances and the duration of the ulcers of the teats are the same. In both cases sections of the ulcers show, under the microscope, identical appearances of a characteristic cellular character. In both cases the tissue of the ulcer is invaded by micrococci, singly, in pairs, and in chains. In both cases, from the purulent discharge of the ulcers, streptococci may be cultivated, which are identical in the description of their form and characters on cultivation. *In both cases the same results are produced by inoculation of calves with* SEPTIC VIRUS. These facts constitute a mass of evidence which justifies the conviction that the pathological data which lent support to *the theory* that the vesicular disease of the teats of the cows at Hendon was scarlatina in the cow, admit of an entirely different interpretation, and consequently *the theory* that the Hendon milk was contaminated with the virus of scarlet fever, from some human source which Mr. Power failed to discover, is not invalidated by the researches of Dr. Klein."

We thus see that the Hendon outbreak of scarlatina, so frequently quoted as proving the origin of scarlatina in the cow, and its transmission to the human subject, cannot be said to have been proven.

Let us now more particularly turn our attention to the outbreak referred to in *The Bailie;* and as it is facts we are in quest of, and not theories or opinions entertained by medical and veterinary experts, I shall allow parties to speak for themselves, and, accordingly, I shall first call upon the proprietor of the inculpated cattle to speak for himself.

The Jaapston Tenant's Statement.

Thomas Wilson—"I am tenant of the farms of Jaapston and Aboon-the-Brae, and entered into possession of them in November 1891. I reside along with my wife, three children, and servants at Jaapston, and my father, mother,

and their family and servants reside at Aboon-the-Brae. We milk 28 cows at Jaapston, and 25 at Aboon-the-Brae, but the cattle and servants are all kept distinct, and the one farm steading is fully one mile from the other. All the cows on Aboon-the-Brae were on Jaapston first for a time, but on 29th May last they were sent up and kept there.

"On or about 11th July, I observed that two or three cows on Aboon-the-Brae had sore teats, and the trouble gradually spread through them, but the cows on Jaapston had no eruptions on their teats until 25th of July. The milk was taken as usual once a day to Glasgow, and there delivered by my milk-van into the premises of the Co-operative Dairy Company. The milk of the cows at both farms was used daily by our families and servants, and until the 4th of August, we ourselves were all in perfect health, and, as regards the cattle, although they had sore teats, and were troublesome to milk, they fed well, milked well, and appeared to me to be in perfect health.

"On 4th August, my eldest child (a boy of two years) took unwell, and our doctor saw him the same evening. He said that he feared it would prove a case of scarlet fever, and, in consequence, the child and his mother and a baby in arms were at once placed in rooms in Jaapston away from us all, My wife alone attended to the affected child, and they had their meals by themselves. The child was only poorly for a few days, and although shut up in the room with his mother, was never confined to bed.

"On 7th August, the manager of the Dairy Company came out to my farm, and reported that cases of scarlet fever had cropped up among persous receiving milk from the company, and that the first case had occurred on the 4th August. This was the first intimation I had had casting suspicion on our milk, and we ourselves at both farms were regularly using the milk, and have since, without intermission, continued to use it. I told him of my child also being attacked with scarlet fever on 4th August.

"As, save the eruption on the teats, the cattle at Aboon-the-Brae were in health, and as there was no scarlet fever among the individuals there, it was suggested and arranged to send the Jaapston cattle up to Aboon-the-Brae, and this was done betwixt four and five o'clock on the morning of the 8th August. On the same day the milk was returned by the Dairy Company, and the same day Dr. Munro, medical officer for Renfrewshire, paid us a visit, and examined all the persons on Jaapston and Aboon-the-Brae. He found one girl (Jeanie Deans) at Jaapston with a sore throat, and she said that she felt it sore the previous day. She continued to work at Jaapston after the cows left, and was better in two days. This girl was one of the three milkers of the Jaapston cows until they were taken up to Aboon-the-Brae; but she was kept at Jaapston, and the other two girls went up with the cattle.

"On 9th August, Dr. Munro, Dr. Russell, medical officer, Glasgow, and Professor M'Call came to Aboon-the-Brae and inspected the whole of the cows. By this time almost all the cows that were giving milk either had eruptions on their teats or were recovering from the effects of these—about half of the number had recovered.

"On 12th August, Professor M'Call returned and again examined the cows at Aboon-the-Brae, and the same day he picked out *twenty-two* cows which he said had recovered from the eruption. These *twenty-two* cows were by his advice washed with disinfectants, and it was arranged that the milk which they gave should be sent in to Glasgow next morning.

"The remaining *thirty-one* cows which had sore teats were, on the advice of Professor M'Call, taken back to Jaapston for treatment, and that the milk which they gave might be made into cheese or churned, which was done, and no complaint has ever been made against the butter.

"On 13th August, the milk of the *twenty-two* cows on Aboon-the-Brae was sent into Glasgow, but the Dairy Company refused to take delivery, and it was

brought back. We now commenced to make butter at Aboon-the-Brae as well as at Jaapston.

"On 23rd August, by arrangement, the milk was again sent into Glasgow, and received by the company, and it was continued to be sent and received for one week; but, on the 30th August, a telegram was sent me to discontinue sending it, as two fresh cases of scarlatina had been reported. We now arranged to sell all the milk as 'lapper' for churning and making butter, and there has been no complaint.

"Regarding the disease affecting my cows, I don't think it has any connection with scarlet fever in man. I have seen the same kind of eruption many a time, but always in cows that were being milked. It spreads from one cow to another by the hand in milking. It is what we call the 'pock,' and if you have a sore on your hand or a cut you will get the 'pock' from the cow. Here is the proof. I blistered my thumb when using the hay-rake, and on milking I got this 'pock.' It was very painful for some days, especially at the arm-pit. Several of the milkers have had a 'pock,' but we attended to them, and they were not bad. About the beginning of August, one of the milkers (Maggie Pollock) had a sore hand, and two pocks formed betwixt the fingers, and as she could not milk, we had no particular need for her, so we allowed her to go home on the 6th August, and she returned on the 20th all right. It was alleged this woman had scarlet fever, but there was no truth in it.

"As formerly stated, the mother and two of our children—the oldest and youngest—were shut up in a room, and as my other child had been in their company, I thought it safest that he should be removed to his aunt's at Neilston, and he was removed on 4th August' the day his brother took unwell. He remained with his aunt till the 24th August; but in consequence of his cousin —a girl of eleven years—being attacked with scarlet fever, he was removed to my sister's house. She resides in Holehouse, Neilston, but the child had only been there two days when one of my sister's children contracted scarlet fever, and on being informed of this, late on the evening of the 26th I decided to have the child brought home to Jaapston. On 28th August, at night, he complained of a sore throat, and next morning the doctor saw him, and as he had a strong suspicion that the trouble was also scarlet fever, he was now placed along with his brother in his mother's apartments, and attended to by her. His attack of scarlet fever was a mild one, and he, as well as his brother, made a good recovery. The village of Neilston was very bad with mild cases of scarlet fever *shortly before my boy* went down, and consequently before my other child at Jaapston had been attacked.

"Regarding how my first child got scarlet fever, I do not know, unless from some of the poor children which come out from Glasgow and reside for a fortnight at Sandayhill and Waterside. These children frequently pass the farm of Jaapston, as the road is a public one past it, and my front doors open on the roadside. The children frequently loiter about, looking at what is going on, and they occasionally purchase a halfpenny worth of milk and drink it.

"During the whole period, myself and all on the farms have drank the milk of the cows and used it without the least restriction, and not one of us have been unwell, and even the two boys affected with scarlet fever have drank it daily, and continue to do so; and some of the cows' teats are still sore. Indeed, at Jaapston we had no other milk to drink than the milk of the cows with eruptions on their teats, as the cows with sound teats, or teats at all events nearly so, were up at Aboon-the-Brae."

Such is Mr. Wilson's voluntary evidence, and given without the least hesitancy or reservation; and now we will take up Mrs. Wilson's evidence.

Mrs. Wilson's Statement.

"I am the wife of Thomas Wilson, and reside at Jaapston. On the evening

of the 4th August, one of my children became affected with scarlet fever, and he and his baby brother and myself were ordered by the doctor to reside in rooms by ourselves. I had assisted in milking the cows, and when I was shut up with my children, I had a pock on one of my fingers, and in a day or two other four pocks formed on the same hand. The hand and arm were swollen, and very painful up in the armpit, and I experienced pain and difficulty in bathing and attending to my baby. Unfortunately, somehow or other, I also gave the pock to my infant, and a large pock formed on the upper surface of the big toe some days after we were shut up. It was painful, and the child fretted, but that was all. I never had scarlet fever, and neither the baby nor myself took the infection from the boys, nor did my husband or any of the servants. I was informed that our milk had given scarlet fever to persons in Glasgow, and was vexed to hear it; but as I was certain that our milk got the infection after it left Jaapston, I never discontinued using it, and as Professor M'Call had sent down to Jaapston all the cows with sore teats, and kept the cows with sore teats at Aboon-the-Brae, I had no other milk to use, and my children, including those affected with scarlet fever, and the baby and myself, all drank of the milk freely, and without any bad effects. The attacks of scarlet fever which my two boys had were very mild."

Such is Mrs. Wilson's evidence, and I will only refer to that of another, viz., William M'Master.

"I am vanman to Mr. Wilson, and deliver the 'butts' containing the milk to the dairy in Glasgow. I never had scarlet fever, nor anyone about the farms, excepting the master's two wee boys. I use the milk daily.

"I am generally in Glasgow at the dairy to deliver the milk at 'six' in the morning. I carry the 'butts' into the dairy, and empty them into large cans which are measured. The empty 'butts' I generally get all back with me, but sometimes not. It is out of the large cans filled by me that the milk is taken by the Dairy Company's servants, and thereafter filled into other cans for distribution. At the dairy, the milk of both farms is mixed, and I have seen the milk from another farm (which generally arrives shortly after ours), poured into the same cans as contains our milk, provided sufficient had been taken out to receive it. The week before scarlet fever broke out, owing to the Dairy Company having more milk than they could sell, I had difficulty in getting empty butts, and when I got them, some of them had a most horrible smell, and had to be boiled, and boiled in the boiler at home, before we could get rid of the smell. I don't know how we got the scarlet fever, but I was told that *one* of the Dairy Company's shopwomen had had a mild attack of scarlet fever."

An Authority on Scarlet Fever.

From the standard work of Dr. Bristowe, 5th edition, page 162, I read—"The contagion of scarlet fever is very powerful and diffusive. It may be carried considerable distances by the atmosphere, certainly through the whole dimensions of a large ward; it clings to clothes and other fomities with great tenacity, and may there lie latent, yet capable of action for an indefinite period; and it is *liable to infect milk* and other articles of food exposed to its influence. Scarlet fever occurs only as the result of contagion, usually conveyed by the means which have already been indicated. It seems that it may also be transmitted by direct inoculation. For there is reason to believe that it can be imparted by inserting the fluid of the scarlatina vesicles, beneath the cuticle of persons who have not yet had it, and it is certain that women at the time of parturition are specially liable to take it, receiving it then in some cases from the fingers of the accoucheur.

"The incubation of scarlet fever is shorter than that of most diseases of the same class. It usually varies between six and eight days, but is occasionally

longer, though very often less. Many cases, indeed, of undoubted authenticity have been recorded in which it certainly did not exceed 24 hours."

An Analysis of the Facts.

Now let us analyse the history of this outbreak of cow disease, and the evidence for and against its being the same disease as scarlatina of the human subject. On the 11th July, in a herd of 25 cows located on the farm of Aboon-the-Brae, two or three are discovered with eruptions on their teats, the disease spreads from cow to cow giving milk. In 14 days later, viz., 25th July, a similar disease commences among the 28 cows on Jaapston, which is a mile distant, and gradually spreads among them.

Regarding this disease, there is no proof of its being infectious, but abundant proof that it is contagious and inoculable. Abundant proof to show that the human hand charged with the virus can inoculate the teat of the cow if there be the slightest scratch upon it, and not only so, but that the operator can inoculate himself or herself.

Now, what is this disease? We are told that it is "bovine scarlatina," a specific disease dependent on the presence of a microbe termed "micrococcus-scarlatina," "streptococcus-scarlatina," and which Dr. Klein *alleges* he had found in the eruptions on the teats, but not in the milk drawn from the affected animals.

It is also alleged that the milk of a cow affected with this disease, if drunk by a human being, produces human scarlatina, but the allegation overshoots the proof. Dr. Klein exonerated the milk, but incriminated the fluid contained in the local eruptions on the outside of the teats. How, then, can it be said that the scarlatina virus originates in the cow?

It might with as much accuracy be said that the hairs of the human head originate scarlet fever, when an outbreak of the disease is traceable to a lock of hair cut from the head of an affected person, and which by the desire of loving friends had been forwarded.

Admitting, however, that the "virus," the "infective agent," is contained in the eruptions on the teats, and *not* in the milk as secreted, and that this organism is under the microscope indistinguishable from that of the alleged organism of human scarlatina, has it been proven that the milk or liquid in the eruptions or the desquamating cuticle produced scarlet fever in those individuals who drank the milk of the affected cows on Jaapston and Aboon-the Brae? I think not. It is the same disease which commenced on 11th July as existed on 4th August, and during these twenty-four days the milk was drunk by men, women, and children employed and connected with both farms, and also by hundreds of individuals within the City of Glasgow, and not one solitary case of scarlet fever resulted.

It may be said that the scarlatina organisms were not sufficiently numerous in the milk to take effect until the bulk of the cows became affected. Even making such a concession, which, I hold, is not warranted by all we know of the life history, reproduction, and propagation of organisms which produce specific diseases; still we have several other formidable objections to offer. The virus of scarlatina fever, we are told, resides in the eruptions on the teats; be it so. Mrs. Wilson becomes inoculated in five distinct parts of her body, and the scarlatina virus gives unmistakable evidence of its having taken effect and been absorbed into the lymph circulation, and yet she remains in health, and has no scarlatina eruptions on her body. Not only so, but the same person inoculated with the specific virus freely drinks scarlatina milk (the very milk alleged to give scarlatina to the inhabitants of Glasgow), and strange to say, she has no scarlatina. Further, this same unhappy person, inoculated at five points with scarlatina virus, and freely ingesting scarlatina milk, gives the disease, said to be scarlatina, to her babe by inoculation; the virus takes

effect; she feeds the babe on her own scarlatina milk, and what more milk is required she supplies it from cows labouring under scarlet fever, and, curious to relate, the babe thrives, and exhibits not one single symptom of scarlatina.

Scarlatina, according to Dr. Bristowe, is an inoculable disease; the mother and the babe are successfully inoculated. Scarlatina, we are told, can be propagated by ingestion (drinking) milk containing the scarlatina virus; the mother and her child drink this milk and are not affected.

Mr. Wilson becomes also inoculated with scarlatina, and drinks daily scarlatina milk for weeks, and remains in health.

Jeanie Deanes becomes inoculated with bovine scarlatina, the virus of which when drank gives human scarlatina, and she also drinks the scarlatina milk and escapes.

Maggie Pollock is also subjected to the double crucial test; her body is inoculated with scarlatina virus, and it takes, and she daily drinks the scarlatina milk which is killing probably some, and affecting many, of the inhabitants of Glasgow, and she also escapes.

The whole human population on the farms of Jaapston and Aboon-the-Brae drink freely of scarlatina milk and escape; the milkers of the animals have sores on their hands similar to those on the teats of the cows, but these sores neither in the cow nor man, bear the least resemblance to the sores or eruptions of scarlet fever.

We come now to the two little boys who, without doubt, were attacked by, and suffered from, the disease, genuine human scarlatina. The first boy was seized on 4th August, and there and then he is, with his mother and her babe, immured within the walls of Jaapston. Where did he get the infection? By drinking the scarlatina milk of the cows? It cannot be, because those who were inoculated with the scarlatina virus from the teats, and also drank the milk of the affected cattle, in no case had a scarlatina eruption or indisposition, such as affected this boy. Not only so, but this child for some days almost lived on the milk of the scarlatina cows, and yet made a good recovery. It was, you will remember, considered a possible explanation how it came to be the fact that for twenty-four days the inhabitants of Glasgow drank the milk of the scarlatina cows and suffered not; that the virus was not sufficiently concentrated; but here we have genuine human scarlatina plus bovine scarlatina daily ingested, yet the child makes a good recovery.

On the same day that this boy shows the first symptoms of scarlatina at Jaapston, the first case of scarlatina in Glasgow from persons using the Jaapston milk is also reported. Is there a connection betwixt the two outbreaks? I think not; but, either way you put it, the impression left on my mind as to the origin of the outbreak is the same.

Twenty-four days' drinking of scarlatina milk produces no scarlatina in those drinking it, in one day a solitary case at Jaapston, and 103 cases in Glasgow result; no more outbreaks at Jaapston traceable to the milk, several more outbreaks in Glasgow. I say, put it either way you like, the origin of the fever points to a human and *not* a bovine source. *The milk* has now undoubtedly become *a vehicle of contamination*, and consequently those who now drink it, after it leaves the dairyman's premises, fall victims to scarlet fever.

I am not particular whether you inculpate the boy at Jaapston, or more probably a boy, girl, woman, or man, employed by the Dairy Company in Glasgow; all I maintain is that the evidence points to a human source of contamination.

Coming to the second boy attacked at Jaapston, you remember he was sent away to his aunt's at Neilston the same day as his brother took unwell. In three weeks after entering his aunt's house her daughter is seized with scarlet fever, but it is clear that the boy did not transmit the disease to her. The trouble was in the village before he went, and before his elder brother was

attacked. He moves to another aunt's house at Holehouse, where scarlet fever also exists, and in two days one of her children is seized. The same evening he is taken home to Jaapston, and in two days the poor little wanderer also falls a prey to the prevailing malady—human scarlatina. Neither this boy nor any other person in the villages of Neilston or Holehouse drank the milk of the scarlatina cows at Jaapston, and no medical officer or any other medical gentleman has called in question the milk supply of these villages, and still human scarlatina prevails; and I feel constrained to say that, if there had been no eruptions on the teats of Mr. Wilson's cows, no one would have incriminated the cows, although scarlatina had followed the path of the milk distribution.

Cows frequently have eruptions on their teats; indeed, it would be difficult to find a herd of milch cows without some of the members of the herd having similar eruptions on their teats.

In the Hendon outbreak a great deal of stress was placed on the fact that some of the cows were desquamating freely, as desquamation of the scarf skin is a prominent symptom in human scarlatina. Singular, so far to relate, in this outbreak of so-called bovine scarlatina, I observed no animal desquamating; but, with the experience I have gained in feeding and milking a large number of dairy cows, I attach little importance to a dairy cow or feeding heifer shedding her hair and throwing off the scarf skin. Keep the animals tied up in a warm cow-shed, and give them warmed boiled food and hot meal drinks, and both hair and cuticle will be shed. The Jaapston cows were lying out and not receiving hot food, and hence they were not desquamating.

In the series of interesting experiments detailed (although not undertaken as experiments), we have found that neither the milk nor lymph contained in the sores on the teats of the cows said to be affected with bovine scarlatina produced human scarlatina when ingested, nor did human scarlatina result when the individuals were not only inoculated, but also largely fed on so-called bovine scarlatina milk.

Further, it was found that two boys labouring under human scarlatina, fed daily on bovine scarlatina milk, made a good recovery. And now we shall refer briefly to experiments undertaken with the express intention of transmitting human scarlatina to cows.

Professor M'Fadyean's Experiments.

The experiments to which I will now refer were carried out by Professor M'Fadyean, of the London Veterinary College, and are given in detail in a report presented to the Agricultural Department by Professor Brown "On Eruptive Diseases of the Teats of Cows in relation to Scarlet Fever in Man."

Experiment I.—"On 24th October, 1887, I inoculated an Ayrshire cow with blood taken from the arm of a scarlatina patient, and on the evening of that day it gave birth to a calf. The same animal had administered to it on the 2nd of November about three pints of water which had been used to wash two scarlatina patients in the state of desquamation, and which contained a great quantity of epithelium. On the 7th of December this cow was inoculated with a subculture of Klein's streptococcus scarlatina, and obtained from Dr. Klein. The cow was kept under close observation for one month after the inoculation. Result, negative."

Experiment II.—"Calf of No. 1 had an injection of Klein's streptococcus. Result, negative."

Experiment III.—"Cow had a plug of cotton wool soaked in water containing flakes of scarlatina desquamation inserted into the vagina. The cow had given birth to a calf two hours prior. Result, negative. Same cow six weeks later was inoculated with a sub-culture of Klein's streptococcus scarlatina. Result, negative."

Experiment IV.—"Calf of cow No. 3 sucked its mother for a month, thereafter had administered a pint of water with scarlatina cuticle. Result, negative."

Experiment V.—"Two calves inoculated with 20 minims each of a subculture of Klein's streptococcus scarlatina. Result, negative."

We thus see that, by the usual methods adopted for transmitting specific disease, viz., by ingestion and inoculation, singly or combined, the human malady, "scarlatina," has not yet, and in all probability never will be, transmitted to cows.

The Duty of Medical Officers.

And now one word as to the duties of medical officers under such circumstances. Undoubtedly, it will be at once admitted that it is the bounden duty of medical officers to take every possible precaution by way of ensuring the health and safety of the public. If, therefore, the medical officers find that outbreaks of scarlatina or other infectious diseases are following in the wake of the distribution of milk from some particular source, it is their duty to have the distribution of milk from that particular source at once stopped, and the cause of contamination thoroughly investigated. I have presented before you a full statement of the whole facts of the Hendon and Jaapston cases by way of showing that no valid evidence has even been adduced to prove the existence of scarlatina as a bovine disease. On the contrary, I have clearly shown how, for the space of 24 days, the people at Jaapston and Aboon-the-Brae were freely drinking the milk of cows alleged to be affected with bovine scarlatina, and yet every one of these individuals remained in a state of perfect health. At the same time, it is perfectly clear that this same milk when sent to Glasgow produced scarlet fever in those who drank it; and this fact clearly shows that this milk must have got contaminated with human scarlatina after being drawn from the cows. Most decidedly it is their bounden duty to instantly put a stop to its distribution.

To "cast to the dogs" the milk of 53 cows, as in the case referred to, is a serious matter—a heavy pecuniary loss—a loss which no ordinary farmer can contend with; but, notwithstanding, the protection of the lives of the lieges justly demands it. The milk is infected, and it matters not who is to blame; its use as a human beverage cannot be allowed. It is for the dairy farmer producing the milk, and the dairyman retailing the same, to discover the source of infection, and cut it instantly off; and in accomplishing this I am sure that both parties will have the hearty and able assistance of Local Authorities and their medical and veterinary officers.

At present, however, the whole or almost the whole pecuniary loss falls upon the producer of the milk, the vendor refusing to receive the milk, cancelling his contract for the time to run, and entering into a new agreement with another party. This is not fair under any circumstances, and very unfair if the infection has gained access to the milk after leaving the producers, premises. I would therefore suggest that the dairy farmers forwarding milk to Glasgow should create a benefit society, appoint one or more medical and veterinary-officers, and a law-agent to attend to and represent their interests; and I would advise that a society on similar lines be created by persons engaged in vending milk within the city; and no doubt, betwixt the well-directed efforts of both societies, outbreaks of human scarlatina and other specific diseases connected with the consumption of milk would be speedily, and with certainty, traced to their source and stopped, and thus pecuniary loss averted and human life protected and prolonged.

NEW VETERINARY COLLEGE, EDINBURGH.

THE opening ceremony of this College for the ensuing session took place on the 5th inst., when Professor Longden delivered the customary introductory address. The chair was occupied by Robert Wallace, Esq., Professor of Agriculture in the University of Edinburgh. There was a large gathering of members of the veterinary profession, as well as students and their friends.

Professor LONGDEN, who was received with loud applause, said: After giving thanks for the honour done him in selecting him to give the opening address, I propose to-day to take, first, a retrospective view, and then offer a few words and suggestions which, I trust, will not be inappropriate. In the first place, I must congratulate the veterinary profession on the vast strides it has made in the last few years. It is not so long since the veterinary surgeon occupied a somewhat ambiguous position, but now all this is altered; the examinations' curriculum demand perseverance, intelligent thinking, and a liberal education, and the veterinary surgeon now occupies the professional status that he should undoubtedly possess. Time and progress have shown that between the treatment of animals and human beings there is but a thin border, and no one can deny that the skilful treatment of God's greatest and most complicated works demands the use of man's highest faculties. Indeed, further, the fashionable physician of the day knows not how much he already owes to the researches of such veterinary lights as Williams, Fleming, and others. Rivalry is good, and engenders healthy competition, and the time must come when the veterinary surgeon and practitioner must stand together more firmly as brothers of the healing art. This leads me at once to take up a few points on the veterinary surgeon's curriculum; and to the students assembled here for the first time I may say they are starting under much more favourable conditions, as a whole, than did their predecessors. As regards the preliminary examination, I think this has been very judiciously rendered harder, and has been raised to the standard of university examinations, as it is only by a very careful study and early training that the seeds of thought and self-reasoning are developed, qualities so essential in acquiring patience, energy, and perseverance. Probably, gentlemen, these requirements are more for the veterinary surgeon than the physician, as the former can only deal with external signs, while the latter has his task rendered somewhat easier, owing to the fact that a patient can in most cases say what he feels. Again, botany I should like to have seen much more cut down, in fact, I would like to have it altogether done away with from the course; but since this evidently cannot be done, I should like to have seen it restricted to that portion of botany which has a distinct bearing on materia medica, perhaps the structural position of botany with those natural orders which include the poisonous plants, in grasses, etc., but not the amount which the student nowadays has to get up; for not one veterinary surgeon who has been in practice two or three years remembers but fragments of his botanical lectures. Materia medica, again, requires pruning down in quantity, as I think, to a more minute knowledge of the physiological action of the few really valuable drugs. Chemistry, again, should be curtailed; as on looking over the syllabus of chemistry copied from the London Veterinary College, I find that the amount is ridiculous, and much more than is required in an University Examination; and I think that it might well be restricted to that portion which would allow the student to understand the chemical changes which take place in the body. It may be very useful to know the chlorine substitution series, to be able to shout out long terms like Trimethylanine; but it is far more important to know

the chemical changes that occur in the process of digestion, or even the chemical changes in morbid growths. No one recognises more than myself the necessity for lectures in chemistry, and its practical study; but the pruning knife would do wonders, and render the chemistry lectures more popular, and the course would be attended with a keener interest and with better results. As regards the alterations in anatomy, I have only this much to say, that a good move would have been to take the anatomy of the horse (bones, ligaments, joints and muscles), in the first examination, and splanchnology with comparative anatomy in the second examination; as it would be better for the student to know thoroughly the anatomy of the horse, so as to have a good basis for learning the differences in other animals. Whilst regretting some of the alterations in the curriculum, there is one circumstance with which I am extremely pleased, namely, the institution of a written as well as an oral examination. The examination prospect, I grant, is not a pleasant one, and the cloud it casts often detracts from enjoyment in work. This, I think, is a serious evil, and it has been increased, as there is now one additional ordeal; but, gentlemen, whilst remembering its defects, one cannot but look with pleasure on the improvement that has been made by the addition of a written examination, as well as an oral. In the days which now happily are passed, the oral examination was the only test a man had to pass. How well we all know what a trying ordeal standing before an examiner is; how the cells of the cortex run riot before the stern examiner's face; how answers refuse to come, aye, even the tongue refuses to move; and, possibly, many a good hard-working, diligent, but nervous student finds himself, through his infirmity, asked to appear six months hence. Examinations are a terror to the idle man, but they should be so to him alone. Keep steadily to your tasks, and the less you think about them, the better you will pass in them. Examinations should be only a stimulus and a guide to the diligent, the paths to the acquisition of that knowledge which will most fit him for the duties he will have to perform. There should be no contention between teaching and examinations. They should co-operate harmoniously in promoting the improvement of mental training, and the acquisition of sound knowledge. I do not think this is sufficiently appreciated by teachers, examiners, and students at the present time; and I am often surprised to hear the sentiment expressed that teaching should guide examination, and not examination guide teaching. Examiners and teachers should be guides, checks and adjuncts to one another. An examiner should try to find out what a man knows, not what he is ignorant of. One defect in examinations is the difficulty in making out the uses of the knowledge gained. The fact may be known, but is there any bearing between the knowledge of the fact and its relation to other facts?—consequently, of rendering the knowledge available. This, I think, is due to the fact that too many subjects are taught in too much detail, and lend to that system of cramming which is too much in vogue at the present time; because therein lies the difference between the knowledge of a fact, and the acquaintance of the causes, uses and ends. This, I think, may be bettered by paying more attention to principles and less to detail. So much of the retrospect; now for the future. Some of you here to-day are starting with a light heart; but, gentlemen, let me tell you you will receive many a rebuff, many a kick, before you finish. Science is a stern mistress and a jealous one. You must be prepared for hard work. But remember, too, that in proportion to your work, so will be your reward. You will often wish the time to come for emancipation from student work; but do not forget that it is when you are qualified your real troubles commence. Though I speak of hard work, do not think that you will have to kill yourselves by so doing. Indeed, I have little patience for the man who is always plodding, but I have still less for the idler. There is a happy medium. Work may be made pleasant, and

examinations are so framed as not to demand your forsaking judicious recreation. Just a few words, in conclusion, on your method of work. Learn as much as possible from observation, and the practical side. Attention, above all, should be learnt, for the attentive man is usually the most talented, and the talented man is attentive. Slovenliness is the result of inattention, and the efforts of education should be the promotion and cultivation of this faculty. It is requisite for good education; it is the soul of memory and ripe judgment. One can tell at a glance the neat, and, therefore, the attentive student, and the slovenly and inattentive, from his habits, note-books, etc. Learn your anatomy in the dissecting rooms, your pathology on the dead subject; above all things, familiarise yourselves with the naked eye appearances of pathological specimens, and try always to trace the relation of symptoms, in your clinical work, to physiology. Don't try to understand a diseased organ without first knowing a healthy one. Bacteriology has also a grand future, and can best be studied in your student days. Finally, gentlemen, be just to yourselves, and you will do justice to your teachers. In conclusion, I give you all a hearty welcome, and wish you every success. This I do on behalf of my colleagues and our esteemed principal, whose name is known wherever veterinary surgery has penetrated. Avail yourselves of his wise guidance, and you will have no cause to regret your sojourn in the new Veterinary College.

Captain STEUART, of Westwood, in proposing a vote of thanks to the lecturer, said they all must have listened with great pleasure and benefit to the very wise lecture which Professor Longden had now delivered. He had touched, and very rightly, on one or two of the defects in the present system of education. He (Captain Steuart) thought the present system went too much into generalisation. One could not study the various branches to the bottom, but only get a general smattering—a very bad thing. In the student's future career his best plan would be to select a special line which he intended to pursue, and after having acquainted himself with the general principles of his profession, to pursue and make himself thoroughly conversant with that particular branch. He had very great pleasure in proposing a hearty vote of thanks to Professor Longden for the interesting and instructive lecture which he had given them.

Mr. SPREULL, M.R.C.V.S., Dundee, seconded. This meeting had been a very pleasant experience to him, and he thought the circumstances led them to expect that in the future the veterinary profession had more to expect from the agricultural body, as represented by the Chairman, and, on the other hand, from the medical profession, as represented by the medical practitioners present. They were extending the right hand of fellowship to the veterinary profession, and altogether he thought the meeting was a happy augury for the future.

The CHAIRMAN said he now had the pleasant duty to convey the unanimous vote of thanks to the lecturer for his excellent paper. Before he did so, however, he wished to say a word or two. He had listened with the greatest interest to his view of the educational curriculum of the profession. He was not quite sure that they would be so highly pleased with the great rise in the preliminary examination, but no doubt something was necessary. He thought the rise was one which would exercise a considerable influence upon the members and students of the profession in general—an influence such as he expected to see here in the immediate future. It was no doubt a step in the right direction, and if it did not go too far it would do good. There was another matter, also, which he wished to refer to. They could not separate without saying a word of sympathy for the agriculturist. The agriculturist never before occupied a position when he required sympathy more, as at no period had he suffered so much in every branch of his business. Something, however, could be done to profit in the breeding of horses. The farmer ought to attend more than he did to the breeding of heavy draught horses. He required

a veterinary surgeon to guide him in many respects, and in breeding as well as in disease. The veterinary surgeon of the future would, he thought be better able to advise the farmer in every branch of that business, when such advice was necessary.

Professor LONGDEN thanked them very sincerely for the kindly way in which they had accorded the vote of thanks.

Principal WILLIAMS said that one observation made by the Chairman had struck him. He said that the veterinary surgeon of the future would be called upon to give the farmer advice when necessary. Their experience of the farmer in the past was this: he did not call upon them when advice was necessary, but when compelled to do so. If he, the farmer, were to consult the veterinary surgeon when advice was really necessary, it would be very much to his own benefit, and also greatly to the advantage of the veterinary surgeon. Now they had heard the interesting address by Professor Longden. He touched upon many subjects, and he (Principal Williams) was pleased, indeed, to understand from the students, by the way in which they had applauded the reference to the written examination, that it was popular. He thought it would énable them to pass better examinations, and that a greater majority would get through them. Some students were very nervous. Next year they would all, however, have written examinations. Let them then be prepared for them. After this year the preliminary examination would be different altogether. They should not be frightened, however, as the "big prelim." did not come till next year. It was a step in the right direction. They had made veterinary surgery the profession of a gentleman, and no man without a considerable degree of education could come into it. They had done great things. He would not boast, but though he might be accused of egotism he would say that the profession had dealt with foot and mouth disease in a remarkable manner. When it came a few years ago, what were the consequences? It spread over the land in no time, and if it came at the lambing season it would be ten thousand times worse. When it got among the lambs it killed them by thousands. It was fatal to lambs, though not to cattle. The latter recovered, but young animals died, and lambs particularly. He also thought they had made pleuro-pneumonia a thing of the past. He differed, certainly, with those who took the matter in hand, and thought they could do quite as effectivély and at less cost. They must, however, give the credit to those who had almost exterminated that scourge. The work of "preventive medicine" should, however, continue; whether or not it would pay was not a problem for him to solve, but some of them would live to see whether it would or not. His own experience was to the effect that if disease disappeared their services would not be required, and they would get no remuneration. As to glanders or farcy, compensation was now to be given. This was also a step in the right direction, but they had no glanders in this part of Scotland now. When it came a few years ago, they soon dealt with it. It was, however, very prevalent in England, and he believed that its continuance there was due to the fact that owners took the advice of the veterinary surgeon less frequently in England than upon this side of the border. As to Professor Longden's reference to chemistry, the point had struck him some years ago. He then said there were many things in chemistry which the student would forget all about. The chemistry of physiological processes, however, led to the understanding of disease, and this branch of it ought to be taught, and remembered by the veterinary surgeon. He was then told by some town councillors that he wished to abolish the teaching of chemistry. What did the veterinary surgeon care about the manufacture of sulphuric acid, or iodine, or epsom salts? He did not, however, agree with the lecturer as to botany. He thought the veterinary surgeon should have a knowledge of botany. It was more necessary to him than to the medical man, who could obtain everything ready prepared from the chemist, and who did not require

to know about the substances or plants. The Veterinarian however, wanted to know the difference between good and bad grass, and poisonous and non-poisonous plants. Alluding to the presence of Professer Wallace in the chair, remarked that agriculture was closely allied with veterinary work. He might he mention, too, that he had the honour himself of being the teacher of veterinary hygiene to the professor, and he was proud to-day of the position of his former student. But he had Professors of Agriculture all over the world; with very few exceptions they had all been taught by "their humble servant." He could say, too, that in all his classes the conduct of the students was at least equal to any that could be claimed by any other teacher of his standing in Edinburgh. He had no doubt but that that conduct would continue as long as he had the honour to stand before them. With these observations he moved a hearty vote of thanks to the chairman, who was always his warm friend, and if any of them had any difficulty in any question in connection with agricultural science, he was sure he would be glad to render every assistance.

Mr. DOBIE seconded the vote proposed by Principal Williams. He remarked that the farmers had loyally carried out the fiats of the government in regard to disease. Pleuro-pneumonia was, he thought, a standing disgrace to the veterinary profession in Edinburgh. It was still a melancholy fact they did not know all about that disease. He took it as a fact that the lung of a diseased cow was not understood in Edinburgh, but had to be sent to London. They should not be satisfied till everything could be done here, where they had quite as good professors.

The CHAIRMAN having briefly acknowledged the vote of thanks, the proceedings terminated.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

THE annual general meeting of the Central Veterinary Medical Society was held on the 6th October, at the Royal College of Veterinary Surgeons. Mr. W. Roots, President, occupied the chair, and the Fellows present were:—Messrs. A. L. Butters, W. F. Barrett, M. Clarke, A. E. Gostling, F. W. Kendall, F. C. Mahon, Professors Penberthy and Pritchard, Veterinary-Captains Raymond and Matthews, H. G. Rogers, W. Roots, S. Slocock, F. Samson, W. N. Wright, J. Woodger. Visitors: W. J. Arkcoll, F. Hobday.

Correspondence.

The SECRETARY stated that he had received letters of apology for non-attendance from Messrs. S. Villar, H. Withers, Sheather, J. F. Simpson, and Professor Walley.

The annual report was read by the Secretary; it was as follows:—

During the Session 1891–92 13 Fellows have joined this Society and one gentleman has resigned. At the present time the Society numbers 103 Fellows.

There have been four meetings of Council, ten ordinary general meetings, and one special general meeting. The average attendance at the ordinary general meetings has been 25.

Five papers or addresses have been read. Those dealing with the important subjects of "Professional Conduct" and "General and Veterinary Education" excited great interest, and this Society may claim to have been the first to direct its attention to raising the standard of general and veterinary education. On these questions the discussions were exceptionally well maintained, and the attendance at the meetings good. Two papers of a more strictly technical character have been read, namely, "The Prevention and Suppression of Glanders and Farcy" and "Intestinal Obstruction in the

Horse." These subjects were freely discussed and certain special resolutions carried.

A number of interesting morbid specimens have been exhibited at the ordinary general meetings.

The Society's prize of £5 open to students of the British Veterinary Schools, was awarded by the judges to Mr. F. Roberts Mulcahay, of Arafinan, Tipperary, Ireland, a student of the New Veterinary College, Edinburgh.

The Council has altered and thoroughly revised the rules of the Society, and these alterations and revisions have been confirmed by a special general meeting.

The receipts during the Session have been £68 os. 5d., and the expenditure amounted to £117 12s. 11d.

The funds of the Society on deposit and in the hands of the Hon. Treasurer amount this day to £188 19s. 8d.

This report and the balance sheet were unanimously received and adopted.

Appointment of Scrutineers.

Mr. F. C. Mahon and Mr. W. N. Wright were appointed scrutineers of the balloting for officers and Council of the Society to serve during the ensuing year.

Election of President.

Mr. SAMSON proposed Veterinary-Captain F. Raymond as president, and this was seconded by Mr. J. Rowe; but the office was declined by Veterinary-Captain Raymond.

Mr. ROWE said, after the manner in which Mr. Roots had fulfilled the office of president during the past year, he (Mr. Rowe) really thought they could not do better than re-appoint him, and if he would consent to serve again, he (Mr. Rowe) would have great pleasure in nominating him. He accordingly proposed that Mr. Roots should be re-elected, and hoped that proposal would have their chairman's assent. A more straightforward, active president they could not have.

Professor PENBERTHY said he had great pleasure in seconding the proposal. Mr. Roots had stood by the Society a long time, and in its highest position had served it well during the past year. He had been most attentive in the discharge of his duties, and was above board in all he did. By re-electing him they would show their approval of his conduct in the chair.

The CHAIRMAN: Gentlemen, I did not come here with the idea of being re-elected president, but as we appear to be short of candidates for the offices, and as I know I shall have the support of all the Fellows, I accept the nomination, and will do my best to make the ensuing year a successful one in the history of our Society.

The election was unanimous.

The following Fellows were elected Vice-Presidents: Messrs. Wragg, Barrett, Samson, and Hurndall.

The Council.

The following Fellows were elected members of the Council:—Professors Shave, Pritchard, Penberthy, Capt. Raymond, Messrs. Hunting, Mahon, Clarke, Gostling, Prudames, Slocock, Butters, and Villar.

Mr. CLARKE proposed the re-election of Mr. Joseph Woodger as honorary treasurer.

Mr. WOODGER said that Mr. Clarke was probably not aware that he had sent in his resignation of the office of treasurer, as he was really unable to continue to hold the office any longer. He hoped that they would appoint someone in his place.

Mr. SAMSON then proposed Mr. Rowe as treasurer.

Professor PRITCHARD seconded the motion; and after a ballot, Mr. Rowe was declared unanimously elected.

Mr. ROWE said he would do his best in the office to which they had appointed him, to promote the interests of the Society.

Election of Secretary.

Mr. Rogers was re-elected Secretary.

Messrs. Butters and Mr. W. N. Wright were elected auditors.

The CHAIRMAN announced that the following gentlemen had been nominated Fellows:—Messrs. F. Hobday, W. J. Arkcoll, and J. Farmer.

Mr. A. MOORE, of Bromley, Kent, sent in his resignation, which was accepted with an expression of regret.

The CHAIRMAN: I do not think that we ought to separate this evening without expressing our sense of the services which Mr. Woodger has rendered this Society as honorary treasurer for many years. He has, I believe, held that position, with the exception of a few years, ever since the Society was formed; and I think we cannot do less to-night, in accepting his resignation, than accord him our hearty thanks for the manner in which he has performed the duties of treasurer during the many years he has held the office. I move, therefore, a vote of thanks to Mr. Woodger for the very able way in which he has discharged the duties of the office of treasurer.

Professor PENBERTHY seconded the motion.

Professor PRITCHARD: Should not something more than an ordinary vote of thanks be given to Mr. Woodger? He has worked very hard for this Society for many years according to what you (the chairman) have said, and according to what I know myself. He has not only been an assiduous worker, but he has assumed a considerable amount of responsibility on the part of the Society, and there has only been one opinion as to the way in which he has acquitted himself, namely, that he has done his duty faithfully, and in the best possible manner. I would suggest that our vote of thanks should be fittingly recorded upon vellum, and thus presented to Mr. Woodger.

Captain RAYMOND said that it was a delicate matter to discuss the merits of a gentleman in that gentleman's presence, but he cordially endorsed the observations of Professor Pritchard, and had no doubt that the vote of thanks would be presented to Mr. Woodger in due form and in a way worthy of the services he had rendered the Society. As one who had caused treasurers of Societies in different parts of the country a certain amount of trouble, he (Captain Raymond) could appreciate the amount of labour which devolved upon those gentlemen in carrying out their duties.

The motion was carried unanimously.

Mr. WOODGER thanked the meeting for their kind vote of thanks, but he denied that the duties he had fulfilled could be regarded in the light of an arduous task. There was, indeed, very little work attached to the office he had held. Only a few Fellows required dunning three or four times a year for their subscriptions; the rest needed no reminder at all, but paid regularly and promptly, and all he had to do was to pay the money into the bank. He had had to write, perhaps, 200 or 300 letters in the course of a year. He resigned because he could not attend the meetings so regularly as he could wish; and he thought that the treasurer should be regularly present, as thereby the necessity for a great deal of correspondence was saved. He thanked them most heartily for their vote of thanks.

MR. ROWE said that before they separated it would not be polite on their part if they did not accord a vote of thanks to their Chairman for the manner in which he had presided over them during the past year. He (Mr. Rowe) thought the past year had been productive of great results, not only so far as their Society was concerned but also the veterinary profession at large. He

had great pleasure in proposing a vote of thanks to their President for his services during the past year.

Professor PENBERTHY, in seconding the motion, heartily congratulated the President upon the good work which had been done during his presidency.

The motion having been unanimously passed,

The CHAIRMAN said he need scarcely remind them that it was not so much by efforts on his part that the Society had attained any measure of success during the past year, as by the assistance and kind support which he had received from the Fellows during his year of office. He felt that he had had their kind co-operation in a greater degree, perhaps, than many of his predecessors, and he trusted that during the ensuing year a like considerate support would be extended to him.

The meeting then terminated.

H. G. ROGERS, *Hon. Sec.*

YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

THE summer quarterly meeting of this Association was held on July 29th, at the Queen's Hotel, Leeds, the president, Mr. George E. Bowman, in the chair, and amongst those present were Messrs. Philip Deighton, Riccall, York; H. Pollard, Wakefield; F. W. Clough, Morley; Jas. Cooke, Scarbro'; F. Somers, Leeds; J. E. Scriven, Tadcaster; John Appleyard, Halifax; A. W. Briggs, Halifax; J. M. Axe, Doncaster; A. W. Mason, Leeds; G. E. Pickering, York; S. Chambers, Kirkheaton; G. Clarkson, Leeds; and W. F. Greenhalgh, Hon. Sec.

Extraordinary Fœtal Remains.

Mr. PHILIP DEIGHTON, Riccall, said I have a case to lay before you, the like of which I imagine has never previously been recorded in the history of our profession; it is so extraordinary a case that certain of my brother surgeons may have some inclination to cast doubts upon the facts, und foreseeing this I am prepared to corroborate everything I state by numerous and reliable witnesses. Six years ago a grey cart mare belonging to Mr. Robert Gamble, farmer, of Kelfield, York, was in foal and going on well. One night she, along with others, got into a rye field, where they were found the following morning about five o'clock. The mare was very fat, and had eaten so heartily of the rye that she was taken ill, and at eight o'clock she was so bad that she was sent from the farm to my place, a distance of half-a-mile. I treated her for colic, gave her medicine and sent her home. This was on Friday the 2nd day of April, 1886, and on this day I distinctly noticed movement of the foal in the mare. On Saturday there was very little improvement in the mare's condition, no motion of bowels, noticed foal move again. Saw mare on Sunday and noticed movement of foal, but this was the last occasion when any movement was observed. Mare continued very ill and had no passage until the following Tuesday. I managed to get the bowels to respond, and everything appeared to be going on satisfactorily, and in about ten days the mare, so far as I could judge, recovered; still she was dull and heavy and by my advice she was turned out; she was out all the summer, but to the surprise of everyone did not foal. During this time a careful watch was kept on her. I should state that although put to no work she lost flesh and became very poor. Ultimately she began to pick up, and between September and October began to gain a little flesh; she was then put to late harvest work, and from that time six years ago down to June 1st this year has been regularly at work. The 2nd of June she was found bad with colic in the field in the early morning, and died the next day. I was away at the time but as I had left special instructions that I should be informed if anything happened, I was acquainted

by telegram with the fact of her illness; I wired that she should be carefully watched, and three or four hours afterwards heard she was dead. I then wired to my assistants to make a careful post-mortem examination to ascertain the cause of death and to discover, if possible, the remains of the foal with which the mare had never parted. My assistants found that a twisted bowel had caused the death, and on opening the uterus the complete skeleton of a fully developed foal was found. All the muscular tissue and cartilage had disappeared, and the walls of the uterus were fully two inches thick.

I submit for your inspection a number of the bones then discovered; I have not thought it necessary to bring all of them, but the rest I have at home. I can only imagine that by some freak of nature the uterus became hermetically closed six years ago, and that gradually all the muscular and fibrous tissues became absorbed, leaving the bones, part of which you now see. They are all as discovered with the exception of two I treated with corrosive sublimate to preserve the small amount of hair on the bone. My assistants at the time were A. Hanson, Norwood Green, Halifax, and D. Barningham, Darlington. The foal was by "Martyrdom."

After some remarks it was decided that the bones and a report of the case be sent to the editors of *The Lancet* for an opinion.

The R.C.V.S. and "Quacks."

Mr. COOKE drew the attention of the meeting to the fact that a certain individual was practising in the neighbourhood of Scarboro' as a veterinary surgeon. Though he was not a member of the College he had cards on which appeared his name followed by an R.C.V.S., member of the Royal College &c. He had placed the facts of the case before the Council and in reply got a printed form on which appeared a number of instructions, &c., and also a request for a subscription in case the matter was gone into. He knew the case of another man who called himself a veterinary surgoon, setting it forth on a brass plate, but he was cute enough not to issue cards, and in the absence of the plate, which it would be difficult to get at, it would be awkward proving the case.

Mr. PICKERING said there was a man in York who called himself a canine specialist, and advertised in the papers that he had a large park in which to exercise dogs. The park no doubt was the Knavesmere. (Laughter). He put V.S. after his name. He (Mr. Pickering) had reported the case to the Council and had been treated similarly to Mr. Cooke. A short time ago a certain firm bought a horse in Whitby, which was accompanied by a certificate as to soundness given, he believed, by the man Mr. Cooke had referred to. Subsequently he (Mr. Pickering) examined the animal and found it had two splints and a spavin on the near hind hock. This impostor used the usual form "I hereby declare, &c.," and signed his name, followed by M.R.C.V.S.

The PRESIDENT said he was afraid it was a difficult matter to stop these men practising. The best thing would be for them to report every case promptly to the Council.

Mr. F. SOMERS thought it was a great shame that the man who reported the cases to the Council should be asked or expected to pay anything before the case was taken up.

Mr. PICKERING thought that if it was illegal for a man to wrongfully put a degree or title after his name the Royal College ought to institute proceedings, as was done by the medical authorities.

Mr. DEIGHTON pointed out that the Apothecary's Society soon took action if any infringement of the rights of its members took place.

Mr. PICKERING said a number of men went about the York district castrating. They adopted the standing position and charged 10s. 6d. each. In several cases fatal results had followed their work, and in order to oppose them he

had done castrating for 5s. He thought the College ought to take this up with a view of stopping it.

Mr. BRIGGS: There is no law to touch him.

Mr. CLARKSON: Those who employ these men take the responsibility.

Mr. MASON: I shall be pleased to give you the fullest information in my power as to what the Royal College is doing in this matter. I happen to be a member of the Registration Committee and I can assure you, you little know the work there is on the books; what there is before us at present, and what in all probability the future will bring forth. It is your own fault if you don't bring these cases before the College. It is the members in the country and in the towns continually travelling about who should take notice of the announcements made on brass plates and business cards. It is useless talking about what ought to be done, if the facts were not laid before the Council. It is no good saying "Mr. so-and-so has a plate up." Where a man commits a gross violation of a bye-law, give all the information you can to the College. They will send you one of these forms to fill up. You seem to be under the impression there is a clause about money. I have asked about this and nobody has been asked yet to give any money; money has been volunteered. Mr. Greaves, I believe, is the only man who has given a cheque towards a prosecution.

Mr. BRIGGS: You are asked to do something. You are asked if you will do something. The inference is, if you don't do so, no further steps will be taken.

Mr. MASON: If that is the inference drawn, allow me to assure you it is not so in fact. The Council will investigate every case the particulars of which you supply, and they are only too pleased to do it. You little know what it costs. Only the most flagrant cases are being taken, and when they are dealt with the other cases will be taken. You must remember that we havn't the Bank of England at our back.

Mr. BRIGGS thought perhaps in the cases mentioned by Mr. Cooke and Mr. Pickering a letter from the College to the offenders would set matters right. There was a case in Halifax. Eighteen months ago a certain veterinary surgeon left the town. He had a brother, a chemist, who still had the surgeon's sign up, and sold various veterinary medicines. He thought that was a case in which a letter from Mr. Hill would be sufficient to put an end to the practice.

Mr. MASON: Every case is taken on its merits. If it is a flagrant case it is a question of prosecuting at once. Then it has to go before the Council. We only sit once in three months. That case waits three months.

Mr. BRIGGS: That is why I suggest a letter in the case I mention would be sufficient.

Mr. MASON: We are asking in the new Charter for power to do this, but we can't do it until we get the Charter.

Mr. BRIGGS: Surely there is nothing to prevent Mr. Hill writing such a letter.

Mr. MASON: Our lawyer tells us we can't do so. You may think we do no work, but I assure you it is the most hard working committee of any. We sometimes sit for three hours. Every case has to be taken on its merits, and the further action depends on the vote of the majority. We do what we can, but our powers are not unlimited; even the profession has no hold on men calling themselves bone-setters. These people however have no *locus standi* in a court of law as to the recovery of money for services rendered.

Mr. CLARKSON thought it would be well if a test case was tried to see if they could not stop these people from going on as they did.

Mr. MASON: It would cost a lot of money. Each association would have to be responsible for a certain amount. As to the statement that they could

not produce a brass plate as evidence, they could at any rate get a photograph of it.

Mr. CLARKSON: I should think an affidavit would be sufficient.

Mr. PICKERING, referring to what Mr. Briggs had said with regard to chemists selling veterinary medicines, said there were several cases in York where cowkeepers and others were advised and prescribed for by chemists.

Mr. MASON advised that Mr. Pickering should obtain proof that these so-styled veterinary chemists had prescribed in any case, and the case would be in a nut-shell.

Mr. CLARKSON thought in the case of a veterinary chemist they could do no good.

A vote of thanks was accorded to the chairman, and the proceedings terminated.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE Quarterly Meeting of the above Society was held at the Victoria Hotel, Manchester, on September 14th.

The PRESIDENT, William Woods, Esq., occupied the chair.

There were 62 members and friends present, amongst whom were a number of the leading medical men of the district.

The following gentlemen were duly elected members of the Association:—Mr. Walter Packman, M.R.C.V.S., Bury; Mr. Harry Race, M.R.C.V.S., Burnley; Mr. William Kendall, M.R.C.V.S., Barrow-in-Furness; Mr. Edward H. Curbishley, M.R.C.V.S., Stockport; Professor W. O. Williams, F.R.C.V.S., Edinburgh.

The Society for the Prevention of Cruelty to Animals v. *Mr. Beard, M.R.C.V.S.*

In connection with this case the Secretary reported that the conviction obtained by the above Society at the Macclesfield Borough Police Court had been quashed on appeal to Quarter Sessions, and the owner of the horse, as well as Mr. Beard, exonerated.

Professor WALLEY then read a paper on

"TUBERCULOSIS,"

which was received with marked attention and applause.

The PRESIDENT, in opening the discussion, said:—I think the paper we have just listened to is the most exhaustive that I have ever heard on the subject. It naturally divides itself into two portions. For convenience we may call them the scientific and practical. The former, Professor Walley has not gone into at great length. Wisely, so I think, for it is out of the other aspect of the question that I hope the discussion this evening will tend to enlarge our views, and strengthen our hands in dealing with the disease in the daily round of duty. The question of the prevention and extirpation of this disease is a very large one, so large that it has received the attention of several governments; but up to the present no measures to this end have been adopted. At the present time, however, a Royal Commission is considering the subject, and the Veterinary Profession, in itself too weak to have much influence on the legislature, is anxious to obtain the co-operation of the sister profession, in order that some enactment may be arrived at, which shall control and check the ravages of this disease, which is equally fatal amongst the human species as the domesticated animals. It is a very large question, but the longer it is left alone, the larger it will become. At any rate, to leave it alone is not to make it less. There is only one stumbling block, and that is

the £ s. d. In a rich country like this, a vital question of public health should not be blocked in this manner, and I should be prepared to argue that to abolish, or, at any rate, to diminish the enormous loss to the country which occurs from its ravages, would be sound finance, and to the nation strictly economical. Tuberculosis is transmissible from man to animals. It is also contagious from one animal to another, and although it has not been proved to demonstration that man may become infected from the lower animals, there can be very little doubt that the disease is spread among our own species by this means. Professor Walley suggests that all diseased animals be killed, and that the entire carcase be effectually destroyed, at the same time giving moderate compensation to the owners. When the question is argued, the difficulty arises, can you diagnose all infected cases because if you say it is contagious, and if you acknowledge that you cannot diagnose the disease in its early stages, when are you going to be successful in stamping it out? I think that that agrees with Professor Walley's statement to some extent, that it cannot be completely eradicated, but there is no reason why eradication should not be attempted. Let us commence by advocating the slaughter of all animals in which the disease affects the mammary gland, or has produced general emaciation. I trust that there may be no delay in carrying this discussion forward, and I may add that I am especially anxious that our medical friends will express themselves on the points which have been raised, and I should be very glad to hear if any conclusions have been arrived at in their own societies on the sanitary aspect of this disease.

Mr. FAULKNER said: Professor Walley is well known in our profession as a most thoughtful and painstaking teacher, and I have no hesitation in saying that he has amply maintained his reputaton in the splendid and exhaustive paper which he has read before us this evening. He has gone into it most fully and taken up all the various details, and I am sure has made the subject a most interesting one. He has gone into matters that are most important, viz., the wide distribution of the disease, its extent, the various channels of infection, some of them of very recent discovery, and the various causes. I am sure that it is a very wide field, and to attempt to take it up in detail or to elaborate, at any rate, on what Professor Walley has said, I think on an occasion such as this would simply be a matter of putting on time. We have a very large meeting, this evening, and I hope, as our President has put before the meeting, we shall obtain the views of the various medical gentlemen present as some means, or aid, in accomplishing some good in a disease that is well known and found to be exceedingly dangerous. I would rather content myself with looking at the matter as a question of public health, a very important matter to stockowners, and a large matter to the members of the medical profession, and also our own. In view of our present knowledge no one will dispute as to the cause of this to be other than due to the bacillus tuberculosis. No one, I take it, will argue anything contraverting the fact of the identity of human and animal tuberculosis, and the intercommunicability between animals and man. This I am perfectly satisfied we have proved by clinical experiments in which to justify that position being taken up, and I hold, as do many of our profession, that within recent years we have had a considerable increase in the disease. Since the Compulsory Slaughter Order of Pleuro-Pneumonia came into force, we have had, I may say, a revelation as to the extent of tuberculosis in the bovines. We know we had the disease extensively, but nothing like to the extent which we now know it to exist, and I do think that the extent to which tuberculosis prevails is very seriously handicapping medical officers and sanitarians in dealing with the death rate. It is all very well to pull down property and to let in light and air, but if the public are consuming infected milk, if they are consuming infected meat, it very much counteracts the efforts of those gentlemen I have alluded to. With

regard to the prevention or extermination of the disease and its ill-effects on the general public—that is, I think, the most important question to which we should address ourselves. To my mind infected milk or milk from a diseased udder should not be used. The question is, how is its use to be prevented? Well, I hold that all dairies, byres, and stock should be under regular inspection and every possible means taken to detect tuberculosis early. Infected milk should not be used. With regard to infected meat, of course, it is a very debatable point. No one takes up the ground that a carcase with general tuberculosis should be used for food because the meat is deteriorated and unfit for use. The debatable point comes in when you get a carcase that is prime and well fed and after the removal of the various internal organs you would never suspect that you had a carcase of an animal the subject of localised tuberculosis. The debatable point comes in whether one is justified in seizing that carcase, or not. I hold that if there is any ground to suspect that that carcase is dangerous it has no right to be used.

Dr. BARNISH, Medical Officer of Health, Wigan, said: Let me first thank the Lancashire Veterinary Medical Association for the courteous invitation they have extended to their brethren, the sister branch of the profession. It has been a great pleasure to me to be present this evening to hear the learned paper that Professor Walley has read to you. I know that Professor Walley is a very much esteemed man in the veterinary profession. He is also well known in the medical profession, especially in the sanitary department. For some years his book on the "Inspection of Meat" has been my manual, and it has guided me in the somewhat difficult work of deciding as to the fitness or otherwise of carcases of meat for human food. I therefore feel it a great pleasure after working with a man's book to see the individual and speak to him myself. Professor Walley's paper bristles with very important points, but I would like to deal more particularly with the practical side, and that is the remedy for all this. Well, I think the first thing we want is a systematic inspection of dairies and cowsheds, in addition to the powers we now possess. Then we ought to have the destruction of the infected animals, and I would like that destruction to be followed by cremation so as to effectually destroy the possibility of remote microbic infection. As to compensation, I assure you it is a very serious thing to be brought before a carcase which looks perfectly healthy and perfectly well, and still you find tuberculosis affecting some of the organs. It is a very serious thing to stand and say "that carcase must be destroyed." The butcher has acted in good faith; he will possibly lose £20 by your action. It is very serious and a very important position to be in, and one that has caused me anxiety on many occasions. If I were satisfied moderate compensation would be made, it would make a difference in my judgment as to whether I should pass or condemn that carcase. I think compensation is only a reasonable thing. In course of time we should eliminate a large portion of the disease which would be a great advance and gain, were we not able to completely eradicate it.

Mr. W. A. TAYLOR said: I extremely regret that I have been unable to be present earlier in the evening and hear Professor Walley's paper on tuberculosis, and the manner in which Professor Walley will have treated it I have no doubt in my own mind. I do not consider that tuberculosis has been proved transmissible from the lower animals to man by the eating of flesh of animals affected with tuberculosis, when the bodies of those animals were well nourished and the disease distinctly localised. The consumption of milk contaminated with tubercular disease is likely to produce similar disease in the human being. If that be true, and I see no reason to doubt it, then when one takes into consideration the amount of milk which is consumed, especially by children, one can easily understand the great number of tubercular affections found amongst the latter. With regard to legislation, well, I

presume that, like the Home Rulers, we shall have to continue to agitate until Parliament is forced to confer some favour upon the public. We do not ask for this favour to be granted to ourselves as a profession, but for the benefit of the human species, and if we can prove to the satisfaction of the country and the government that such legislation would benefit human health, then I think in common fairness the public purse ought to pay for that benefit. I quite agree with the remarks of the medical officer about the need for the systematic inspection of dairies, ship-pens, and milk shops, particularly those in and around large cities. I am given to understand that these duties are frequently relegated to the nuisance inspector, a man who possibly has had no experience amongst the animals from which we derive our meat supply, and who certainly has had no training in the diseases of those animals or knowledge of the various organisms, their method of development and dissemination, by means of which other animals and man become in like manner diseased.

Mr. HOPKIN: Mr. President and Gentlemen,—The question of tuberculosis has been under the consideration of the Government, and we are told that since they have so practically and effectively dealt with pleuro-pneumonia, tuberculosis will have their serious consideration. In order to effectually deal with the disease it will be necessary not only to destroy the animal in which the disease has made marked progress, but it will be necessary to isolate those with which it has been in immediate contact when the same has occurred in a byre. It is also necessary that stricter regulations be enforced for greater cubic space and a better maintenance of the supply of fresh air than at present exists in many of the byres in and around large cities. Much more stringency must also be observed than is at present as to the removal of fæcal matter and soiled bedding, for many of these shippens are simply hot-beds in the production and distribution of tuberculosis. The long period of incubation, or rather the length of time which usually elapses between the date of infection and the time when the disease makes itself manifest, and the difficulty of tracing the mode of infection alike in animals and our own species demands the greatest care and thoroughness in any measures devised, and to minimise the effects of this widely-spread disease. With respect to the question of compensation, I am of opinion that it should be placed on the lines of the other contagious diseases in bovines, and compensation granted. The loss to the country by this disease is, in my opinion, greater than that of foot and mouth disease and pleuro-pneumonia combined.

Dr. FAULKNER, of Stretford, thanked the Association for the kind invitation they had extended to him, and remarked that he came in the capacity of a learner and had benefited very much by listening to Professor Walley's paper. For himself he thought the danger of infection from milk had been rather overdrawn. He looked to improved sanitation, both as applied to the surroundings of domesticated animals and to the housing and feeding of the working classes in our large towns, to modify to a great extent the disease and death now resulting from tuberculosis. He thought that great difficulty would be experienced in obtaining legislation on the subject, inasmuch as the nature of the disease and the means of its extinction were such that medical opinion had not, up to the present time, been able to form definite conclusions as to how to deal with the disease.

Mr. GREAVES thanked Professor Walley for the excellent paper he had brought before the Society, and remarked that it was a very favourite subject of the Professor's—that he remembered him reading a paper on the subject twenty years ago, and that he thought no other man in our profession understood the disease better than the Professor. Mr. Greaves remarked that he himself had had no great or special experience in tuberculosis, that he had noticed what rapid strides had been made in the knowledge of the disease, and how, as his knowledge became extended, other animals formerly thought

to be free from the disease were found to be all so liable. He was strongly of opinion that the legislature should insist upon the constant inspection by a competent Veterinary Surgeon of all animals killed for human food, and that a record should be kept of all diseases so found, with a report as to their extent and what became of the carcase.

(To be continued.)

Jurisprudence.

PROSECUTION OF A VETERINARY SURGEON FOR CRUELTY TO A HORSE.

At the Maidenhead Police Court, on September 14th, before the Mayor (J. F. Simpson Esq.) and C. W. Cox, Esq., H. Humphreys, carman, and B. Eggleton, M.R.C.V.S., were charged at the instance of the Royal Society for the Prevention of Cruelty to Animals with having unlawfully and cruelly ill-treated a horse. It appeared from the evidence that the animal had one of its feet affected with "canker," and was, or had been receiving treatment from Mr. Eggleton, who had advised the owner to work it as this was more favourable to recovery than standing idle in the stable.

For the prosecution Professor Pritchard appeared, and in the course of examination he asserted he had seen the best skilled veterinarians in this and other countries always fail to cure the disease.

Mr. C. W. Griffiths, M.R.C.V.S., Reading, also appeared for the prosecution.

For the defence Messrs. Mulvey, F.R.C.V.S., W. Hunting, F.R.C.V.S., of London, and H. Allnutt, M.R.C.V.S., Windsor, appeared.

The evidence was so conflicting that the Bench acknowledged it was impossible to arrive at a correct decision; so the case was dismissed, the Court costs having to be paid by the Society.

PROSECUTIONS BY THE ROYAL COLLEGE OF VETERINARY SURGEONS.

At the Bristol Police Court, on September 13th, Alfred Martin, of 304, Stapleton Place, Stapleton Road, Bristol, was summoned for an infringement of Section 17 of the Veterinary Surgeons Act, 1881. Mr. W. R. Wansborough (of the firm of Wansborough & Robinson, of Bristol) prosecuted, as agent for the Royal College of Veterinary Surgeons, and Mr. Clifton (of the firm of Clifton, Carter, & Co.) appeared for the defendant.

Evidence was given that outside the defendant's house was a sign-board containing the words "Alf. Martin, Veterinary Practitioner. Cattle treated for all kinds of diseases." The Register was put in to prove defandant's name was not on it.

Mr. Clifton, on behalf of the defendant, pleaded guilty, and stated the board had been up for four years and defendant had put it up in ignorance of the law, but had now taken the board down and promised not to again put up one of a like description.

The Bench pointed out to defendant that when persons entered into any profession they were supposed to make themselves acquainted with the law. As, however, he seemed to have acted in ignorance, he would be dealt with leniently and only fined £1 and costs.

At the Lambeth Police Court on 28th September, W. P. Biles, of 5, Elliott Road, Vassall Road, North Brixton, was summoned for an infringement of the Veterinary Surgeons Act. Evidence was given by Mr. Davis, clerk to Mr. Thatcher, that defendant had up on his premises, "W. P. Biles, Veterinary Farrier," and that he also had on his billheads the words, "W. P. Biles, Veterinary and Farrier;" and also refers to fever and other drinks, and stated that dogs were attended to. &c. Mr. Colam informed the magistrate that this was a very bad case, and pressed for a heavy penalty. The defendant contended that what he had done was in ignorance, and that, on receiving a caution, he had taken down his boards, and that the words on his lamp were painted out, but that in cleaning it had been washed off; he further contended that he did not practise Veterinary Surgery; all that kind of work was sent to Mr. Thomas Sangster, and attended to by him. The magistrate informed him that this only aggravated the case; and he was convicted of the offence, and fined £10 and £3 10s. costs.

At the Llangollen Police Court on 27th September, Roberts Watts, of Church Street, Llangollen, was summoned for an infringement of the Veterinary Surgeons Act. Evidence was given that the defendant had on his door plate "Robert Watts, Veterinary Surgeon," and Inspector Hampshire gave evidence that he had been practising veterinary surgery for some considerable time. The magistrates convicted the defendant, but said they were inclined to deal leniently with him; they fined him £1 and one guinea costs.

At the Cullompton Police Court on 26th September, Thomas Hill, of Hemyock, Cullompton, was summoned for an infringement of the Veterinary Surgeons Act, he having put the letters "V.S." after his signature on two certificates in relation to a horse. Inspector Greenwell gave evidence that defendant had up on his door a brass plate with the words "Thomas Hill, Veterinary Surgeon," and also that he had signed certificates and put the letters "V.S." after his name. The solicitor for the defence took objection to the authority of the College, and contended that someone from the College ought to attend and lay the information. The Court overruled this objection, and, after hearing the case, convicted the defendant; on his promising to take down the brass plate, and undertaking not to use the letters, or similar ones, in future, they dealt leniently with him, and fined him 30s. inclusive.

At the Dublin Police Court on 22nd September, James Coleman, of No. 1, Camden Place, Dublin, was summoned for an infringement of the Veterinary Surgeons Act. Evidence was given that the defendant had up over his premises "Royal Veterinary Forge," and the prosecuting counsel submitted that this was a case similar in all respects to the decided case of the R.C.V.S. *v.* Robinson. Counsel for the defence urged that no offence against the Act had been committed, but the magistrates convicted the defendant, and fined him 2s. and £2 costs, they stating that the decided case was only reported last month in Ireland, and therefore they would not inflict a heavy penalty.

Army Veterinary Department.

Gazette, September 27th.

Arthur England, Gent., to be Veterinary-Lieutenant, in succession to Veterinary-Captain M. Anderson, deceased.

Gazette, October 14th.

HERTS YEOMANRY CAVALRY. — Veterinary-Lieutenant W. S. Harrison resigns his commission.

The Secretary of State for India has sanctioned the assumption by the three remaining officers of the old Indian Veterinary Department, of the military rank and titles borne by officers of corresponding rank in the Army Veterinary Service. The three officers are Mr. Hallen, Inspector-General of the new Civil Veterinary Department; Mr. Kettlewell, Inspecting Veterinary Officer, Madras Army, and Mr. F. G. Shaw, now on furlough.

Veterinary-Major J. C. Dwyer joins the Army Remount Establishment on 1st inst., vice Veterinary-Captain G. D. Whitfield, transferred to Portsmouth for executive duty on completion of his tenure of appointment with above.

Veterinary-Major J. Reilly has been granted an extension of twelve months with Army Remount Establishment.

Veterinary-Captain R. F. Frost has been transferred from Athlone to Curragh Camp, vice Veterinary-Captain F. W. Forsdyke, who has been granted leave pending embarkation for India.

The following moves of Veterinary Officers will be effected on 1st proximo :—

1. Veterinary-Major J. A. Woods, from Portsmouth to Aldershot.
2. Veterinary-Captain G. F. Davis, from Aldershot to Athlone.
3. Veterinary-Lieutenant A. H. Sullivan, from Aldershot to Woolwich.

Veterinary-Lieutenant-Colonel F. Walker, Inspecting Veterinary Officer, Eastern Circle, Bengal, has been granted three months' leave to England.

Veterinary-Captain G. H. Fenton, Madras, has been granted three months' leave to England.

Veterinary-Lieutenant E. W. Larnder has been granted an extension of three months' sick leave in England from India.

Veterinary-Captain S. Longhurst arrived at Cahir with 10th Hussars from Dublin on 10th September.

Veterinary-Lieutenant F. D. Hunt, has rejoined at Aldershot from temporary duty at Brighton, and has been granted two months' leave prior to embarking for India.

Veterinary-Captain E. Day arrived at Newbridge with 9th Lancers from the Curragh on 10th September.

Veterinary-Captain R. Pringle arrived at Dublin with 2nd Dragoons from Newbridge on 15th September.

Veterinary-Lieutenant J. G. O'Donel arrived at Dundalk from the Curragh with 15th Hussars on 19th September.

The Secretary of State for War, on the recommendation of his Royal Highness the Commander-in-Chief, has appointed Veterinary-Captain Seaward Longhurst, Professor of the Army Veterinary School, vice Veterinary-Captain F. Smith.

Veterinary-Captain S. Longhurst has joined at Aldershot from the 10th (Royal) Hussars, Cahir, in anticipation of taking up the above duties on December 1st.

Veterinary-Lieutenant E. E. Martin has been transferred from Aldershot to Cahir for duty with the 10th (Royal) Hussars.

Obituary.

We are sorry to have to report the death, on the 23rd. Sept., from blood poisoning at Laughton, Sussex, of George Boyer Wills, M.R.C.V.S., Lond., Veterinary Inspector elect for the Hailsham Division of East Sussex, in the 25th year of his age.

J. Robson, M.R.C.V.S., Penrith, died on October 9th. In 1856 he obtained the Certificate of the Highland and Agricultural Society, and in 1879 became M.R.C.V.S.

The following deaths have also been reported :

G. B. Wills, M.R.C.V.S., Stroud Green, graduated in 1890.

J. J. Doyle, M.R.C.V.S., Enniscorthy „ 1881.

W. Sandford:, M.R.C.V.S., Moneymore, County Kerry, graduated in 1880.

A melancholy interest attaches to the announcement of the death of C. L. Helman, whose name will ever be remembered as the discoverer of Mallein—a discovery which promises to be of the greatest value in diagnosing and suppressing glanders. Helman was born in Courland, Russia, in 1846, and received his early education at Mitau; he afterwards entered the Dorpat Veterinary Institute, where he terminated his studies in 1877. Rewarded by a gold medal for his work on the development of spermatozoïds in the vertebrata, he was attached to the Institute as a clinical assistant, a position which he held for eighteen months. Continuing his researches on the same scientific subject, he wrote a thesis upon it; this he successfully defended at the public *séance* on May 12th, 1879, and it obtained for him the grade of licentiate in Veterinary Science. Soon afterwards he was appointed Veterinary Surgeon to the regiment of Horse Guards. Notwithstanding the demands upon his time, Helman did not refrain from pursuing his studies in the hope of being one day able to devote himself entirely to scientific work. This dream he had the good fortune to realise, for he was called to take an active part in the organisation of the establishment which the Prince of Oldenburg founded for the preventive treatment of rabies. His visit to Paris in 1886 had a great and happy influence upon him, as he was initiated at the Pasteur Institute into the problems and methods in the study of modern microbiology, the immense importance of which he fully realised, and resolved to benefit his country by devoting himself to it. Pasteur was greatly pleased with his aptitude and devotion to science, and recommended him in flattering terms to the Prince. In his return to the Antirabic Station laboratory of St. Petersburg, Helman gave himself up with ardour to the study of infectious diseases, and more particularly to glanders and rabies; but he soon perceived that work of this kind, in order to be successful and exempt from danger, required a better installation than that which was placed at his disposal. He was sent again to Paris, and also visited England in 1888, to make a special investigation into the scientific institutions consecrated to this new branch of biology, and to gain a complete idea of the installation necessary for these kinds of researches. At this period he called upon us in London, and we were much struck with the advanced views he entertained with regard to the manner in which medicine should be studied, and the grand future of bacteriology.

When he returned to Russia his views so much interested the Prince of Oldenburg, that they gave rise to the idea of founding the Institute of Experimental Medicine, which Helman was called upon to aid in organising, and in which he was made chief of the epizootiology laboratory. In this institution everything was placed at his disposition for the continuation of his researches on the grandest scale, so as to allow them to be fully fruitful. Here his studies on glanders marked a bold step in advance, and the results had a wide practical application. He was already a member of a commission appointed to devise measures for the suppression of glanders, and his discovery of mallein and the important use to which it could be put, led to great demands for it—demands which could only be met by Helman preparing large quantities of it at the Institute. Other valuable work of much promise was also begun, but, unfortunately, an injury to the head which he had sustained some years ago had been gradually undermining his health, and the close and zealous manner in which he laboured at his tasks no doubt tended to hasten the disease that had developed to a fatal termination a few weeks ago, at the early age of forty-six years.

Besides the works he had already published, he was lately engaged in investigations on natural immunity against Tuberculosis and Rabies, as well as seeking for means whereby to confer immunity against these maladies, as well as Anthrax. The authorities connected with the Institute have examined the papers which he has left, and all those which are sufficiently complete will be published in its Archives. The following appeared during the lifetime of our deceased *confrere*: 1. Etude sur les formes furieuses et paralytiques de la Rage chez les lapins (*Annales de l'Institut Pasteur*, tome II., No. 5): 2. Action du virus rabique introduit, soit dans le tissu cellulaire souscutané, soit dans les autres tissus (*Ibidem*, tome III., No. 1): 3. Sur les méthodes cliniques et expérimentales de diagnose de la morve (*Vestnik des Sciences Veterinaire*, 1891, No. 4): 4. Diagnose de la morve au moyen d'injections sous-cutanées d'extrait de bacilles de la morve (*Vestnik des Scienees Veterinaires*, 1891, No. 5.)

Dr. A. G. T. Leisering, Medical Councillor of the Kingdom of Saxony, and late Professor in the Veterinary High School of Dresden, died on August 20th, in his 72nd year. By his decease Germany has lost one of its foremost Veterinarians—one who had a very distinguished professional career, and was known far beyond the Fatherland for his scientific and general accomplishments. He contributed largely to veterinary literature, and several of his books have been of much service in promoting veterinary knowledge; among these may be mentioned his treatise on the Foot of the Horse (*Der Fuss des Pferdes*), published in 1861, and of which the seventh edition appeared in 1889; in conjunction with Professor Müller, of the Berlin Veterinary School, a work on the Comparative Anatomy of the Mammalia (*Handbuch der Vergleichenden Anatomie der Haussäugthiere*), published in 1872, and since republished several times; an atlas of the Anatomy of the Horse, etc. (*Atlas der Anatomie des Pferdes und der Ubrigen Hausthiere)*; with monographs on Glanders, Tuberculosis, and other maladies of the domesticated animals.

The University of Leipsic conferred upon him its honorary diploma of Doctor of Medicine, and he received the title of Medical Privy Councillor of State in the same year; he was also the recipient of several decorations, and filled a number of offices pertaining to the profession. He was made an Honorary Associate of the Royal College of Veterinary Surgeons. We had the pleasure of meeting him at the International Veterinary Congress held at Brussels some years ago, and were charmed with his affability and many-sidedness. A most sympathetic and interesting obituary notice of him has been penned by our good friend, Professor C. F. Müller, of Berlin.

Notes and News.

TUBERCULOSIS IN THE ZOOLOGICAL GARDENS OF LONDON.—Out of 126 consecutive deaths of animals from all causes at the Zoological Gardens, no fewer than 41, or 33½ per cent., were due to tuberculosis.

LOSSES FROM HORSE-SICKNESS IN SOUTH AFRICA.—An amended return of the mortality from Horse-Sickness in the Cape of Good Hope Colony during last year shows that 16,394 horses and 149 mules were lost.

BACTERIOLOGY IN INDIA.—Dr. A. Lingard has been appointed to the Civil Veterinary Department, Calcutta, as Professor of Bacteriology and Comparative Pathology, in charge of the Imperial Bacteriological Laboratory, with the title of Imperial Bacteriologist.

KNACKERS IN GERMANY.—The number of horses killed annually in Germany is about 86,000, there being 2,400 knackers. A preliminary meeting was recently held to consider the question of forming an association with a view to raising the condition of these men, and improving the arrangements of the knackeries.

A MONSTER PIG.—One of the largest pigs ever known in England has been purchased by Mr. Shier, a Worksop pork butcher, from Mr. Machin, of Gateford Hill. It was too large to get into the pig-cart, which necessitated it walking to Worksop, a distance of two miles. It was only eighteen months old, and scaled over sixty stones. It was 8 ft. 11 in. long. and 6 ft. 4 in. round the body.

THE PROTECTION OF CATTLE FROM THE ŒSTRUS BOVIS AND OTHER FLIES.—In an American contemporary, a farmer writes to say he has been successful in protecting his cattle from the fly pests by applying to their skin the following mixture: Pine tar, one part; fish oil, two parts. The oil is employed to keep the tar from sticking. If fish oil cannot be obtained, lard may be used. The addition of two parts crude carbolic acid to the ointment improves it.

VORACITY OF OSTRICHES.—An ostrich died of old age in the Botanic Gardens, Paris. On being dissected, there were found in his stomach three knives, 17 stones, 80 thick coppers (French sous), a veritable saving box, as also one tin of sardines, a porcelain doll, a pipe, and a goblet. The ostrich swallowed everything thrown at him, but preferred shining objects. One day a Cavalry officer, just decorated, took a walk with a lady on his arm through the gardens. The bird saw the cross of Legion of Honour shining on the breast of the officer, stretched out his neck, and swallowed the "Star of the Brave" like a burned almond.—*Le Protecteur dés Animaux, Paris.*

LONGEVITY OF THOROUGHBRED STALLIONS.—A correspondent of the *Live Stock Journal* for Oct. 15, writes: It may be interesting to some readers to know that here, in Ireland, we had two famous thoroughbred sires, which were at the stud when thirty-three years old. Will Scarlett, whose stock have won several times as weight-carriers at Dublin Show, as well as being the sire of the Empress of Austria's famous hunter, was foaled in January, 1875, and did duty at stud in the season 1890. I saw the old horse when over twenty-nine years old; he looked fresh and vigorous. His back was hollowed a little, but he was as firm on his legs as ever. He died in November, 1890, when within two months of completing thirty-four years. Lothario by King Tom was foaled 1859, and is said to have been at the stud this year. He stood in Portadown during the season 1891, and was strong and vigorous, and was used a good deal, and, I am informed, sired some foals. He looked healthy and well, but was stiff in his movements.

THE PROLIFICACY OF PIGS.—In White's "Natural History of Selborne" there occurs the following reference to the longevity and prolificacy of pigs: "The natural term of a hog's life is little known, and the reason is plain, because it is neither profitable nor convenient to keep that turbulent animal to the full extent of its time; however, my neighbour kept a half-bred bantam sow, who was as thick as she was long, and whose belly swept the ground, till she was advanced to her twentieth year, at which period she showed some symptoms of age by the decay of her teeth and the decline of her fertility. For about ten years this prolific mother produced two litters in the year of about ten at a time, and once above twenty at a litter; but as there were nearly double the number of pigs to that of teats, many died. From long experience in the world, this female was grown very sagacious and artful. When she found occasion to converse with a boar, she used to open all the intervening gates, and march by herself up to a distant farm where one was kept, and when her purpose was served, would return by the same means. At the age of about fifteen her litters began to be reduced to four or five pigs; and such a litter she exhibited when in her fatting pen. She proved, when fat, good bacon, juicy and tender; the rind, or sward, was remarkably thin. At a moderate computation, she was allowed to have been the fruitful parent of three hundred pigs. She was killed in the spring, 1775."

Correspondence.

DISEASES OF HORSES IN MASHONALAND.

SIR,—In the August number of your valuable Journal, just to hand, you inserted some remarks by Dr. Rayner on the disease known as "Horse-sickness," and of the losses sustained by the British South Africa Company in Mashonaland.

I have no doubt that the information given by the Doctor is correct, but when he comes to define the disease as a malarious one, I must differ from him, I do so because, after a long experience of this disease, I have never been able to trace a case that has occurred in a horse that has not partaken of green food; while it is a well-known fact that horses kept in stables near the banks of streams or low-lying grounds, where malaria may be expected, live in perfect health as long as they are fed entirely on dry food, no matter how open the stables, or how much exposed to malaria. On the other hand, lots of stabled horses die if they have green food given to them in the stable.

Horses supposed to be fed entirely on dry food, often find opportunities of picking mouthfuls of grass when standing about held by native grooms, when put into strange stables, or when the riders are sitting on their backs chatting; and after years of close questioning in every case that presented itself, I believe that I have invariably found that the victim had partaken of green food; while I cannot recall a single instance of it occurring in a horse that did not have green food—always grass.

I am told that some farmers in the Transvaal, keep their horses in all day until about five o'clock, then turn them out for the night and have them brought in just before sunrise; that being, in their opinion, the critical time. They claim that since adopting this plan they have lost no horses. If this is correct it is opposed to the theory of malaria.

It is true that the disease most frequently occurs in certain months—in summer and autumn—but not always, as cases are occasionally known during other months of the year, but chiefly on the Coast.

In June, 1881, during the Boer War, a case is said to have occurred in a mule, near Ladysmith in this Colony, at a time when the weather was cold and there was snow on the ground; and some Boers who saw it expressed surprise.

The statement that it occurs most frequently in low-lying places, &c., is hardly borne out by the experience of the last few years. To illustrate this, I may mention that in 1886, one district in this Colony, about 3,500 to 4,000 feet above the sea, suffered most severely, many hundreds of horses dying; while in this town, 1,500 to 2,000 feet lower, we did not suffer very much, and on the Coast very little. Last year, 1891, the upper portion of this Colony, from Ladysmith and Rorke's Drift respectively, to Newcastle and beyond, and the adjacent portions of the Orange Free State and Transvaal, suffered most severely, many hundreds of horses dying; while the rest of this Colony suffered very little indeed. On this occasion the disease appeared on a farm in the Free State, where it had never been known before, and where horses were sent because it was supposed to be perfectly safe; yet the owner lost 180 horses out of his troop. The district I consider very healthy, and I should estimate it as somewhere about 5,000 feet above sea level. Where does the malaria theory fit in here, because as far as is known, the climatic conditions were in no respect different from what we experienced in other parts of the country?

During last summer it was very severe in the Cape Colony, and in two districts of this Colony adjoining the Cape territory of East Griqualand. Why it was not as bad here no one can say.

I could give other instances which, in my judgment, upset the theory of the malarious origin of the disease.

"Salted" horses have a certain value in the Transvaal; but they are liable to be attacked by the disease again. I once saw a horse very ill with it; it was said to have recovered from two former attacks; no medicine was obtainable, and I heard afterwards that the animal died in a few hours after I saw it.

No particular medicine appears to be of special value in this disease. Many remedies have been tried, and much skill has been expended in attempts to cure, but with very indifferent success. It is to be regretted that the Cape Government should retain the services of an amateur to try his remedies, when the conscientious efforts of able men in its own and other services have demonstrated the futility of seeking for a specific remedy.

As you are well aware, sir, this disease was defined by myself and others to be one form of anthrax, an error first pointed out by my friend Mr. Hutcheon, C.V.S., of the Cape Colony. The investigation of this disease is now in able hands, and the Cape Government is to be congratulated on securing the services of Dr. Edington, who, I have reason to believe is likely to be successful in his researches, and I sincerely hope he will. Anyhow, from what I have seen of the genial Doctor, I have the impression that he will get to the bottom of it, and what he doesn't find out concerning it will not be worth worrying about, that is, in the present state of human knowledge.

S. WILTSHIRE, C.V.S., NATAL.

MARITZBURG, *8th September*, 1892.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from G. Thatcher, London; W. F. Widden London; F. J. Tucker, Brampton, Cumberland; W. T. Greenhalgh, Leeds; T. B. Goodall, Christchurch; Vet.-Captain J. A. Nunn, Lahore; A. W. Hill, London; Vet.-Lieutenant Blenkinsop, Lahore; R. Ward, Baltimore; Professor Müller, Berlin; E. Clarke, London; Arnold & Sons, London; J. B. Wolstenholme, Manchester; Veterinary-Surgeon Desmond, Warrnambool, Australia; S. Wiltshire, Natal, South Africa; J. Lawrence Hamilton, M.R.C.S., Brighton; E. F. de Jong, Edinburgh; J. W. Barker, Lincoln, Nebraska; U.S.A.; Professor Williams, Edinburgh; H. G. Rogers, London; Professor McCall, Glasgow; D. C. Pallin, Lucknow, India.

BOOKS AND PAMPHLETS: *Dr. G. Müller*, Theorie und Praxis der Thierärztlichen Wundebehandlung; *Dr. E. Klein.* The Etiology and Pathology of Grouse Disease: *Drs. Boschetti, Bassi and Fleming*, Trattato di Ostetricia Veterinario; *Dr. F. S Billings.* A Public Scandal; Transactions of the Bombay Veterinary Association. Memoires Publies par la Societe Nationale d'Agriculture de France; *Dr. F. Boschetti*, Della Pneumografia della Diagnosi della Bolsedine; Bulletin de la Societe Centrale de Medecine Veterinaire; Archives des Scienes Biologiques de l'Institut Imperial de Med. Experimentale a St. Petersburg; *Dr. L. Stubbe.* Rapport sur l'Etat Sanitaire des Animaux Domestiques en 1891 en Belgique.

JOURNALS, ETC.: *Cape of Good Hope Agricultural Journal*; *American Veterinary Review*; *Bacteriological World*; *Revue Vêterinaire*; *Annales de Méd Vêtérinaire*; *Recueil de Med. Veterinaire*; *Live Stock Journal*; *Journal of the Royal Agricultural Society of England*; *Journal de Méd. Vêtérinaire*; *Clinica Veterinaria*; *Repertorium der Tierheilkunde*; *Presse Vêtérinaire*; *Deutsche Zeitschrift fur Thiermedicin und Vergleichende Pathologie*; *Echo Vêtérinaire*; *Archiv fur Wissenschaftliche und Praktische Thierheilkunde*; *Lancet*; *British Medical Journal*; *Mark Lane Express*; *Edinburgh Medical Journal*; *Baily's Magazine*; *Journal of the Royal Geographical Society*; *Journal of the Society of Arts*; *Condensed Extracts*; *Wochenschrift für Thierheilkunde.*

NEWSPAPERS: *Maidenhead Advertiser*; *Baltimore Sun*; *Egyptian Gazette*; *Natal Mercury.*